ESKOM HOLDINGS SOC LIMITED

DRAFT ENVIRONMENTAL IMPACT ASSESSMENT REPORT

12026KNK

PROPOSED CONSTRUCTION OF THE WESKUSFLEUR SUBSTATION, WESTERN CAPE

August 2015

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DOCUMENT CONTROL

Date	Revision	Name	Role	Signature

DOCUMENT CHANGE HISTORY

Date	From Version	To Version	Paragraph Reference	Change Description

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FIGURES

ABREVIATIONS

AIS	Air Insulated Substation
BID	Background Information Document
CV	Curriculum Vitae
CoCT	City of Cape Town
CTIA	Cape Town International Airport
DEA	Department of Environmental Affairs
DEADP	Western Cape Department of Environmental Affairs, Cape Nature and Development Planning
DWA	Department of Water Affairs
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EPS	Environmental Professional Services
EMPr	Environmental Management Programme
EMS	Environmental Management Systems
IDP	Integrated Development Plan
I&APs	Interested and Affected Parties
FSR	Final Scoping Report
GIS	Gas Insulated Substation
KV	Kilovolts
KNSP	Koeberg Nucleur Power Station
MAP	Mean Annual Precipitation
MTS	Main Transmission Station
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NSBA	National Spatial Biodiversity Assessment
OECD	Organisation for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
PoS	Plan of Study
PPP	Public Participation Process
SIA	Social Impact Assessment
SOE	Stare Owned Enterprises
TIA	Traffic Impact Assessment
WMA	Water Management Area
ZVI	Zone Visual Influence

1. EIA SUMMARY: WESKUSFLEUR PROPOSED SUBSTATION SITE

1.1 General

Eskom Holdings SOC Limited initiated a study to investigate possible alternatives and solutions to address the long term reliability and improvement of the existing 400kV Gas Insulated System substation (GIS) at Koeberg Nuclear Power Station (KNPS) in the Western Grid. The study also included the future long term 400/132kV transformation requirements at Koeberg substation.

The current 400kV GIS substation was in operation for almost 30 years and there is a concern regarding its reliability as it is difficult to repair as a result of discontinued technology. There is also no space for additional 132 kV feeder bays at Koeberg Substation to accommodate future requirements for new lines.

It is for the aforementioned reasons that a new 400/132kV substation (Weskusfleur Substation) will be required in the vicinity of the Koeberg Power Station to:

- Improve the existing 400kV reliability
- Cater for load growth on the 132 kV network for the 20-year horizon.
- Prevent overloading of existing 400kV busbar
- Replace 30 year old technology/equipment

To improve the reliability of Koeberg MTS, several options were investigated and the option to build a new 2x250MVA, 400/132kV substation in the vicinity of the existing Koeberg GIS substation was the preferred one. Therefore from the 5 alternatives investigated during the scoping study only 2 vaible options remained being **alternative site 1** – next to Koeberg Nuclear Power Station (KNPS) and **alternative site 4** also close to KNPS but just across the R27 provincial road passing KNPS. Besides the site alternatives carried through to the EIA phase technical alternatives were also taken into consideration namely Gas Insulated Substation (GIS) as well as Air Insulated Substation (AIS) design. These 2 technical alternatives vary considerable in footprint. For AIS approximately 42 hectares compared to the 7,2 hectares for the GIS design.

The technology that will be used depends on the final location and technology option as per the outcomes of EIA process. The substation will need to account for the current and future needs/plans. The length of the diversion of the power lines will also be determined by the final substation's location.

1.2 Process to date

The scoping phase of the EIA process started in 2013. The process was halted in that the Department Environment Affairs (DEA – National) rejected the scoping report and plan of study due to certain requirements that Eskom, Koeberg, had to have in place before the process could continue. This

requirement formed part of previous conditions set in other EIA studies done at Koeberg. It was stipulated that no further applications for any development at Koeberg will be considered if:

- The training centre completed at Koeberg;
- Nature Reserve stewardship agreement signed by Cape Nature on the proposed reserve around Koeberg; and
- That a Nature Reserve management plan be submitted to Cape Nature for approval.

For this reason the process halted for more than a year. The process started again towards the end of last year when the specialist continued with their investigations.

1.3 Specialist involved and process

Due to the sensitivity of this area, hence the Nature Reserve and stewardship agreement, certain specialist studies were included into the EIA process. During the specialist integration workshop held in July 2015 all fields were rated according to the importance. From the scoping study it already became clear that certain fields will have a greater importance in the site selection process. After each specialist presented its finding all participants at the workshop re-evaluated the importance and by consensus the following results emerged:

Specialist fields including technical represented by Eskom.

Visual	2.40	1
Ecology	2.10	2
Groundwater	2.10	3
Surface water/freshwater ecology	2.00	4
Eskom Technical/finance	1.90	5
Heritage	1.80	6
Traffic	1.60	7
Agriculture	1.50	8
Social and Tourism	1.40	9

See full description of methodology in main report.

1.4 Outcome of the EIA process

In summary with taking into account all the public participation as well as interested and affected parties involvement, the site selection as well as technology preferred is available as outcome from

the rigorous EIA process. For each specialist field all possible impacts were identified and weighted in the significance table for extend, duration, magnitude and probability for each possible impact that each specialist identified. It is also done for all phase of the project namely construction, operational and de-commission phase. The specialist integration workshop takes the outcome and statistically weighs it for each alternative.

1.5 The result

Table 1:1 Alternative Site 1 next to Koeberg came out as the preferred site with the least negative impact:

Weskusfleur ranking	Site 1	Site 4	Weight
Social	4	2	1.40
Visual	4	3	2.40
Fauna	4	3	1.80
Flora	4	2	2.10
Avifauna	4	2	2.10
Ground water	4	3	2.10
Surface water	3	4	2.00
Traffic	4	3	1.60
Heritage	3	4	1.80
Agriculture	4	3	1.50
Eskom	4	2	1.90
EIA Team	4	2	1.80
Total Score	**46**	**33**	
Weighted Scores	**86**	**62**	

1 = Not suitable for development / No-Go (impact of very high significance - negative)
2 = not preferred (impact of high significance - negative)
3 = acceptable (impact of moderate significance - negative)
4 = Preferred (impact of low or negligible significance - negative)

1.6 Reasons in summary:

From an environmental point of view the following is important in choosing site 1:

- The footprint of site 1 is 7,2 compared to 41,8 hectare for site 4;
- Adding the additional power line deviations necessary for site 4 (AIS) it increases the footprint to 61,8 hectare;
- Site 1 is situated within the security area of Koeberg Nuclear Power Station (KNPS) which mean that no additional access security needs to be appointed and less security fences erected;
- Site 4 is totally separated from KNPS and will need an additional road and security;

- Alternative site 1 is in already highly disturbed area and outside the sensitive areas associated with the nature reserve;
- From a visual point of view (sic) the KNPS provides the background and visual point and an additional structure will not be intrusive as for alternative 4. The mere size of the AIS substation for alternative 4 with no other structures surrounding it with high masts will have an negative visual impact;
- Most negative impacts can be mitigated for site 1 which is not so easy for site 4.

From an environmental point of view and through the rigorous process of impact analyses it is recommended that the department authorises the proposed building of the GIS substation on site 1.

As quoted from the **ecology specialist report**:

"Overall, it is clear that Alternative 1 is the preferred Alternative for the Weskusfleur substation site. With the appropriate mitigation and avoidance measures applied, it is highly unlikely that it would generate significant long-term impact on biodiversity. There are no red-flag issues or fatal flaws associated with this Alternative and as such, there are no compelling ecological reasons to oppose the development of the substation at this site."

And from the **Visual specialist report**:

"The findings of this study are that the Alternative 1 is the preferred visual alternate with mitigation. This is due to the smaller size of the GIS structure which is adjacent the existing NPS on already modified ground, and the complication of the Alternative 4 transmission line routing

Mitigation measure are included in this report and will be suggested and included into the draft EMPr (**see Appendix N**). This can form part of the authorization conditions.

2. INTRODUCTION, ROLE PLAYERS, LOCATION, PROPOSED ACTIVITY PLAN AND LEGISLATIVE CONTEXT

The Eskom Conversion Act, 2001 (Act No. 13 of 2001) establishes Eskom Holdings SOC Limited (Eskom) as a State Owned Enterprise (SOE), with the Government of South Africa as the only shareholder, represented by the Minister of Public Enterprises. The main objective of Eskom is to "provide energy and related services including the generation, transmission, distribution and supply of electricity, and to hold interests in other entities".

Eskom Holdings SOC Limited (Eskom) is responsible for the provision of reliable and affordable power to South Africa. Eskom's core business is the generation, transmission (transport), trading and retail of electricity. Eskom currently generates approximately 95% of the electricity used in South Africa.

Eskom Holdings SOC Limited initiated a study to investigate possible alternatives and solutions to address the long term reliability and improvement of the existing 400kV Gas Insulated System substation (GIS) at Koeberg Nuclear Power Station in the Western Grid. The study also included the future long term 400/132kV transformation requirements at Koeberg substation.

Eskom Holdings Limited therefore required the services of an environmental consultant to conduct the necessary Environmental Impact Assessment (EIA), to obtain environmental authorisation from the relevant authorities.

Lidwala SA was appointed as their independent Environmental Assessment Practitioner (EAP) and has been commissioned by Eskom Holdings Limited to conduct the scope of work, including the EIA, as required by the National Environmental Management Act (Nr. 107 of 1998).

2.1 Summary of the EIA Process

In terms of the EIA Regulations published in Government Notice R543 of 2 August 2010 in terms of Section 24 (5) of the National Environmental Management Act (Act No. 107 of 1998), certain listed activities as set out in Government Notices R544, R545 and R546 require environmental authorisation before they can proceed. The process is done in consultation with the Western Cape Department of Environmental Affairs, Cape Nature and Development Planning (DEA&DP).

Through the EIA process Lidwala EPS and the relevant specialists will identify and assess all potential environmental impacts associated with the proposed Project. In order to obtain authorisation for all

aspects of this project, comprehensive, independent environmental studies were undertaken in accordance with the EIA Regulations.
There are three phases to the EIA process that are typically recognised:

- Application Phase;
- Scoping Phase; and
- EIA or Assessment Phase.

2.1.1 Application Phase

The Application Phase consists of completing the appropriate application form by the Independent EAP and the proponent as well as the subsequent submission and registration of the Project with the competent authority. The DEA has been confirmed as the competent authority, in conjunction with commenting authorities DWA, as well as the DEADP. This project is dealt with under the regulations process before changes were applicable during December 2014.

The Application form was submitted to DEA on **12 March 2013**. The DEA reference number allocated to this application is **14/12/16/3/3/2/508** and the NEAS Reference Number is **DEA/EIA/0001780/2013**. An amended application was also submitted to DEA on 18 July 2013 to account for the amended locality of alternative 4 and the associated properties affected.

2.1.2 Scoping Phase

The scope of an environmental assessment is defined by the range of issues and alternatives to be considered, and the approach towards the assessment that will follow. The characteristics of a scoping exercise are as follows:

- It is an open process that involves the authorities, the proponent, stakeholders and I&APs;
- Feasible and reasonable alternatives are identified and selected for further assessment;
- Important characteristics of the affected environment are identified;
- Significant issues that are to be examined in the assessment procedure are identified; and
- It provides the basis for determining terms of reference for the assessment procedure.

The final scoping report was submitted to the department during June 2015 after receiving the final information from Eskom on the Stewardship Agreement and Management plan submission to Cape nature. The previous Draft scoping report was submitted during 2013 but was rejected by the Department because of the requirements Eskom had to meet first before the scoping document could be reviewed. Therefore the second round of Public Participation to review the final scoping report after Eskom fulfilled all the requirements took place during June to the end of July 2015.

2.1.3 EIA or Assessment Phase

Once the Final Scoping Report and the Plan of Study (PoS) for the EIA is submitted and accepted by DEA the Project proceeded into its detailed EIA or Assessment Phase which involves specialist investigation.

All specialist studies were completed and a specialist integration workshop took place during 23 July 2015 at Koeberg. Lidwala EPS produced a Draft Environmental Impact Report (EIR) for a 40 day public and authority comments.

The Draft EIR provide an assessment of all the identified key issues and associated impacts from the Scoping Phase which follow the process proposed in the PoS.

Final EIR

The Draft EIR will be placed in public places so that the public can review it. It is also send to Departments for their input and comments. These comments will be incorporated into the final EIA and adjustments made to those sections necessary.

2.2 Way Forward

The Draft Scoping Report was distributed for public comment for a period of 41 calendar days. All comments on the document were considered and a response thereto provided within the Comments and Response Report prior to submission of the FSR to the relevant authorities for consideration.

While the final scoping report was out for public scrutiny during a 41 day period and all comments where necessary included, DEA rejected the FSR received on 30 September 2013. The rejection was based on conditions set in an environmental authorization issued for an EIA process that was completed in 2010 for an administrative centre and training campus on Cape Farm 34. The conditions were:

- That the construction of the proposed administrative centre and training campus must be finalised before any other development on Cape Farm 34 is submitted for environmental authorization and;
- Eskom must submit a management plan for its private nature reserve and enter into a stewardship agreement with Cape Nature.

Due to the fact that the administrative centre and training campus are not completed and this caused, with the other condition, that EIA process for the sub-station came to a halt.

These conditions were lifted and Eskom submitted the management plan and entered into a stewardship agreement with Cape Nature which means that this EIA process can now continue. This FSR also include the proof that all conditions were met.

DEA notified Lidwala on 26 June 2015 that they accepted the Final Scoping Report as well as the PoS and can therefore continue with the Draft EIA report. The structure will follow the approved PoS as well as the structure as set out in Government notice No 38282 of 4 December 2014 in order to cover all relevant aspects necessary for DEA to make an informed decision.

2.3 Details of EAP and expertise

➢ Introduction

The following section of the Draft EIA provides the particulars, including contact details, of the applicant, the EIA consultant and the relevant authorities.

➢ Details of Applicant

The details of the applicant are shown in **Table 1.1** below.

Table 2:1 Details of the applicant

Name of Applicant:	Eskom Holdings SOC Limited
Contact person:	Martina Nailana
EIA Project Manager	Lerato Mokgwatlheng
Postal Address:	P O Box 1091 Johannesburg 2000
Tel:	011 800 6812
Fax:	086 660 5639
E-mail:	MokgwaLL@eskom.co.za

➢ Details of Independent Environmental Assessment Practitioner

The members of Lidwala has extensive experience in the environmental strategic planning fields, impact assessment, management plans and other related environmental fields such as waste management, Environmental Management Systems (EMS) and environmental legislation. The company's impressive track record includes a wide range of projects.

Our team's combined experience in the environmental field ensures that we are able to successfully complete this project.

The CVs of the Project EAP, manager and the environmental scientists are available in **Appendix C**.

Table 2:2 Details of the independent EIA consultant (Environmental Assessment Practitioner - EAP). Although one person is acting as EAP Lidwala SA operates with a highly trained team that provide specialist input and review.

Name of Consultant:	Lidwala Consulting Engineers (SA) (Pty) Ltd
Contact person:	Frank van der Kooy (Pr Sci Nat)
Postal Address:	P.O. Box 32497, Waverley, 0135
Tel:	0861 543 9252
Fax:	086 686 1628
E-mail:	environmental@lidwala.com
Expertise to conduct this EIA: **Frank van der Kooy (Pr Sci Nat)** is currently the Environmental Specialist and Technical Director. He holds diplomas in both Agriculture and Landscape planning as well as an Honours Degree in Sociology of city and urban planning, environment and ecology. He is registered as an environmental scientist (Pr.Sci.Nat) with the SA Council for Natural Scientific Professions. Frank has over 38 years of experience in the environmental field. He provides strategic and technical input on a diverse range of environmental fields and projects including the design and implementation of environmental management systems, environmental impact assessment studies, environmental management plans, as well as the provision of environmental management solutions and mitigation measures.	

- **Details of Competent / Relevant Authority**

The National Department of Environmental Affairs (DEA) will act as the competent authority and the DEA&DP as the commenting authority for this application.

Table 2:3 Details of the relevant competent authority – DEA

Name:	National Department of Environmental Affairs

	environmental affairs Department: Environmental Affairs REPUBLIC OF SOUTH AFRICA
Contact person:	Mahlatse Shubane
Address:	Environment House 473 Steve Biko, Arcadia,Pretoria,0083
Tel:	+27 (0) 12 399 9417
Fax:	+27 (0) 86 601 6892
E-mail:	mshubane@environment.gov.za

➢ **Details of Commenting Authority**

Western Cape Department of Environmental Affairs and Development Planning

The Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) will act as a commenting authority for this application.

Table 2:4 Details of the commenting authorities – DEA&DP

Name:	Western Cape Government Environmental Affairs and Development Planning
Contact person:	Mr. Alvan Gabriel
Address:	1 Dorp Street Cape Town
Tel:	021 866 8000
Email:	alvan.gabriel@westerncape.gov.za

2.4 Locality

The study area falls within the Western Cape Province between Blouberg and Atlantis. The distance of towns from the Koeberg Power Station is: Blouberg = 17,2km, Atlantis = 12,6km,

Melkbosstrand = 5,5km and Duinefontein = 2, 2 Km. The R27 (provincial road) is located just south of Koeberg.

Figure 2:1 The location of the study area within the City of Cape Town Metropolitan Municipality

2.5 Study Area (3 a to c)

The study area falls within the City of Cape Town Metropolitan Municipality in the area adjacent to the existing Koeberg Nuclear Power Station (KNPS) (Koeberg) near Melkbosstrand, 30 km north of Cape Town on the West Coast. The area is bounded to the north by the West Coast District Municipality, to the north east by Cape Winelands District Municipality, to the south east by the Overberg District Municipality and to the south and west by the Atlantic Ocean. Alternatives 1- 4 is close to Koeberg within the red circle indicating the alternatives within the study area (**Figure 2.1**). A list of the farm portions is included in **Table 2.1.** **Figure 2.2** shows the location of the proposed alternatives within the study area.

- **Alternative 1** – Located at the north-east corner of the KNPS for the 400kV yard and the southern part of the parking area south of the incoming 400kVlines for the 132kV yard. Duynefontein 34 has since the EIA process started been consolidated in one portion now called: Farm Duynefontein 1552.

  400kV yard: 33°40'15.73"S/18°26'1.39"E
  132kV yard: 33°40'26.64"S/18°26'11.32"E

- **Alternative 4** – Offsite option to the east of the R27 on the farm Brakke Fontein 32.

  33°40'00.54" S/18°28'17.32" E

Table 2:5 A list of the farm portions within the study area for site 1 and 4.

Ptn	Farm name	SG code
R	Duynefontyn 34	C01600000000003400000
0	Groot Oliphantskop 81	C01600000000008100000
1	Brakke Fontein 32	C01600000000003200001
2	Kleine Zoute Rivier 1063	C01600000000106300002
3	Kleine Zoute Rivier 1063	C01600000000106300003
4	Kleine Zoute Rivier 1063	C01600000000106300004
18	Kleine Zoute Rivier 1063	C01600000000106300018
23	Kleine Zoute Rivier 1063	C01600000000106300023

Figure 2:2 Proposed 2 alternatives in the Study Area, AIS site 4 and GIS site 1.

➢ **Legislative context (3, e):**

This project started before the revision of the regulations that were enacted towards the end of 2014. The relevance of the "old" regulations is still therefore applicable to this project.

A full Scoping/EIA is required for those activities that are considered to have a medium to high

detrimental impact on the environment.

➢ **The activities associated with this project include the following:**

Indicate the number and date of the relevant notice:	Activity No (s) (in terms of the relevant notice) :	Describe each listed activity as per project description[1]:
No. R. 544 Listing Notice 1 August 2010	**9(i) and (ii)**	The construction of infrastructure which exceeds 1000m in length for the transportation of storm water may be required with an internal diameter of 0.36 metres or more; or with a peak throughput of 120 litres per second or more for the proposed substation and associated infrastructure. *The relevance for any of the above mentioned items will be confirmed during the Environmental Impact Assessment Process.*
	10(i)	The construction of a 132kV substation and associated infrastructure which may include the shifting, deviation, reroute, bypass, redirecting and construction of new turn-in transmission lines outside an urban area for the transmission and distribution of electricity.
	11(i), (ii), (vi), (x) and (xi)	The construction of canals, channels, bulk storm water outlet structures, buildings exceeding 50 square meters in size; or infrastructure or structures covering 50 square metres or more within watercourse or within 32 metres of a water course might be required for the substation infrastructure. *The relevance for any of the abovementioned items will be confirmed during the Environmental Impact Assessment Process.*
	13	The construction of facilities for the storage and handling of dangerous good (80 to 500 cubic metres). During construction transformer oil may be stored on site before pumped into transformers. Fuel and other substances to be used during construction may need to be stored on-site.
	18(i)	The development of the substation may require the excavation, removal or moving of soil from a watercourse. *The relevance of this activity will be confirmed during the Environmental Impact Assessment Process.*
	23(ii)	The substation and its associated infrastructure will be outside an urban in an area which is currently undeveloped. The land will be transformed industrial use over an area of

		<20 ha. *The relevance of this activity will be confirmed during the Environmental Impact Assessment Process as the final footprint size is still to be confirmed.*
	27(ii)	The decommissioning of the existing substation infrastructure >132kV.
	38	The expansion of current substation and transmission infrastructure as part of the proposed substation and associated infrastructure might be required.
No. R. 545 Listing Notice 2 August 2010	**8**	The construction of a 400kV substation and associated infrastructure which may include the shifting, deviation, bypass, reroute, redirecting and construction of new turn-in transmission lines and/or new lines for outage requirements outside an urban area for the transmission and distribution of electricity.
	15	The substation and its associated infrastructure will be on land which is currently undeveloped. The land will be transformed industrial use over an area of >20 ha. *The relevance of this activity will be confirmed during the Environmental Impact Assessment Process as the final footprint size is still to be confirmed.*
No.R. 546 Listing Notice 3 August 2010	**3(d)(ii)**	The construction of masts or towers outside an urban area for telecommunication broadcasting or radio transmission exceeding 15 metres on an area not previously used for this may be required as part of the substation and its associated infrastructure.
	4(d)(ii)	The construction of a road wider than 4 meters with a reserve of less than 13.5 meters outside an urban area as part of the substation and its associated infrastructure.
	13(a)	The construction of the substation and associated infrastructure may result in the clearance of an area of 1 hectare or more of vegetation where 75% or more of the vegetation cover is indigenous within a critical biodiversity area and ecological support area as identified in systematic biodiversity plans adopted by the competent authority.
	14(i)	The construction of the substation and associated infrastructure may result in the clearance of an area of 5 hectare or more of vegetation where 75% or more of the vegetation cover is indigenous outside an urban area.

➢ **The following general acts applicable to all actions irrespective of the type of development:**

The Constitution (Act No 108 of 1996), The Promotion of Administrative Justice Act (Act 3 of 2000), Promotion of Access to Information Act (Act 2 of 2000, the following may be applicable to the various phases of the development:

Table 2:6 Summary of applicable national environmental legislation

Legislation	Sections	Relates to
National Environmental Management Act (No 107 of 1998)	Section 2	Defines the strategic environmental management goals and objectives of the government. Applies throughout the Republic to the actions of all organs of state that may significantly affect the environment.
	Section 24(a) &(d) &24(5)	Listed activities and Regulations
	Section 28	The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care.
National Environmental Management: Biodiversity Act No 10 of 2004	-	Provides for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act1, 998; the protection of species and ecosystems that warrant national protection.
National Environmental Management: Protected Areas Act No 31 of 2004	-	To amend the National Environmental Management: Protected Areas Act, 2003, to provide for the application of that Act in relation to national parks and marine protected areas; and to provide for matters connected therewith
Environment Conservation Act (No 73 of 1989)	Section 2	General policy.
	Section 16	Provides for the setting aside of Protected Natural Environments (PNEs). Any construction activities within the PNE require the consent of the PNE management advisory committee and the Premier of the relevant province.
	Sections 19 and 19A	Prevention of littering by employees and subcontractors during construction and the maintenance phases of the proposed project.
The Conservation of Agricultural Resources Act (No 43 of 1983)	Section 6	Implementation of control measures for alien and invasive plant species.

Legislation	Sections	Relates to
National Heritage Resources Act (No 25 of 1999)	-	Provides general principles for governing heritage resources management throughout South Africa including national and provincial heritage sites,
National Water Act No 36 of 1998	Section 19	Prevention and remedying effects of pollution This section places a duty on Eskom to establish whether any of its activities causes or may cause pollution to a water resource including wetlands.
	Section 20	Control of emergency incidents Eskom needs to identify the possibility of any substances used which may cause significant pollution of water resources during an accident or incident. Management procedures need to be implemented to prevent such accident or incident.
	Section 21	Water uses requiring water use license applications. Eleven different water uses are listed in Section 21 (a) to (k)
National Environmental Management: Air Quality Act (No 39 of 2004)	Sections 26-27	Control of fuels.
	Section 32	Control of dust.
	Section 8	General duties of employers to their employees.
	Section 9	General duties of employers and self employed persons to persons other than their employees.
	Sections 3 to 10	Control of the use of registered pesticides, herbicides (weed killers) and fertilizers.
	Section 98	Identification of any specially protected or rare and endangered species.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	-	The purpose of this Act is to reform the law regulating waste management in order to protect health and the environment by providing for the licensing and control of waste management activities.
Occupational Health and Safety Act (No 85 of 1993)	Section 8	General duties of employers to their employees.
	Section 9	General duties of employers and self employed persons to persons other than their employees.

Legislation	Sections	Relates to
Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act (No 36 of 1947)	Sections 3 to 10	Control of the use of registered pesticides, herbicides (weed killers) and fertilisers. Special precautions must be taken to prevent workers from being exposed to chemical substances in this regard.

Table 2:7 Summary of applicable provincial environmental legislation

Legislation	Provisions & Applicability
Cape Standard Sanitary Regulations PN 527 of 25 July 1952	In the event that any septic tanks need to be constructed in the course of the implementation of this project, these regulations should be adhered to.
Cape Local Authorities Standard water Regulations PN 504 of 19 June 1953	These regulations relate to plumbing work and water supply. With any development of infrastructure, this will be applicable.
Cape Land Use Planning Ordinance no 15 of 1985	Issues such as land use and zoning are regulated in terms of this Ordinance.
PN 1050 of 5 December 1988	In the event of any subdivision or rezoning of land, these regulations will apply.
Cape Municipal Ordinance no 20 of 1974	These Ordinance sets out the procedures of acquiring immovable property and rights.
Cape Nature and Environmental Conservation Ordinance no 19 of 1974	In terms of this Ordinance the following is matters are regulated: • Protection of flora; • Establishment of provincial nature reserves; • Establishment of local nature reserves; and • Protection of fish in inland waters which basically relates to pollution of inland waters.
Western Cape Planning and Development Act no 7 of 1999	This Act regulates the following: • Land use restrictions and rezoning; and • Subdivision.

	This will be applicable to any planning and land development related activities and serves to guide the administration of any spatial plans, policies, etc. Application made in terms of this Ordinance must include a floodline certificate indicating whether the land or any portion is or is not subject to a 1 in 50 year floodline.

At *Local* Level the local and municipal authorities are the principal regulatory authorities responsible for planning, land use and the environment. The proposed project falls within the City of Cape Town Metropolitan Municipality.

- In terms of the Municipal Systems Act (Act No 32 of 2000) it is compulsory for all municipalities to go through an Integrated Development Planning (IDP) process to prepare a five-year strategic development plan for the area under their control.
- Bioregional planning involves the identification of priority areas for conservation and their placement within a planning framework of core, buffer and transition areas. These could include reference to visual and scenic resources and the identification of areas of special significance, together with visual guidelines for the area covered by these plans.
- By-laws and policies have been formulated by local authorities to protect visual and aesthetic resources relating to urban edge lines, scenic drives, special areas, signage, communication masts, etc.

- **Other applicable Policy and Guidelines**
  - Management of Stormwater Impacts Policy (CoCT)
  - Stormwater Management on Slopes Adjacent to Natural Area (CoCT)
  - Stormwater Management Planning and Design Guidelines for New Developments (CoCT)
  - Provincial Spatial Development Framework (DEA&DP)
  - Guideline on public participation (August 2013 DEA&DP)
  - Guideline on alternatives (August 2013 DEA&DP)
  - Guidelines for involving specialists in EIA processes (including Heritage, Biodiversity, Visual & Aesthetic, EMP) DEA&DP
  - Guideline on Need and Desirability (August 2013) DEA&DP
- **National Policy and Planning Context**
  - **White Paper on the Energy Policy of the Republic of South Africa**

The Energy Policy governs development within the energy sector in South Africa, and has five policy objectives which are as follows:

- Increased access to affordable energy services;

- Improved energy governance;
- Stimulating economic development;
- Managing energy related environmental and health impacts; and
- Securing supply through diversity.

This places this development in another light (sic) due to the urgency and possible interruptions due to the old substation that need replacement.

- **Energy Security Master Plan – Electricity (2007-2025)**

The Electricity Security Master Plan was compiled by the DME in 2007. The plan addresses all aspects of the electricity sector including generation, transmission and distribution as well as Demand Side Management and energy efficiency initiatives for the period 2007-2025.

- **National Spatial Biodiversity Assessment ("NSBA")**

The NSBA establishes protection and conservation priority status for terrestrial, inland water, estuarine and marine ecosystems at a 1:250,000 scale nationally and suggested implementation options for priority areas. It provides the national context for development of biodiversity plans at the sub-national and local scale.

- **Draft National Strategy for Sustainable Development**

The (draft) National Strategy for Sustainable Development stems from Section 24 of the Constitution and particularly the phrase "secure ecologically sustainable development and use of natural resources while promoting justifiable economic and social development."

3. SCOPE OF THE PROPOSED DEVELOPMENT

3.1 Need and Justification for the project (3 f):

Koeberg Nuclear Power Station is the only nuclear power station in Africa. It boasts the largest turbine generators in the Southern Hemisphere and is the most southerly-situated nuclear power station in the world. Being a nuclear power station, it is vital that the reliability of the electrical infrastructure associated with this power station is never compromised. The station is also critical for grid stability in the Cape.

The Koeberg current substation is due for refurbishment. It has been in operation for almost 30 years; over 8 failures related to post insulators since commissioning has been experienced. The biggest concern with this type of failures is that they result in long duration outages. To maintain the reliability of this system, life extension interventions need to be carried out. Areas of concern have been identified by the GIS equipment specialist team which needs to be addressed in the immediate future.

The Koeberg GIS bus duct system is based on the ABB (manufactures) GIS technology that was designed for very long busbars. The original equipment manufacturer (OEM) has since discontinued the use of GIL technology based egg insulators citing amongst other reasons; difficulty in fabricating the insulators, reliability concerns and difficulty to repair.

The installed 400/132 kV transformation at Koeberg Substation is 2 x 250 MVA. The load forecast indicates that the firm capacity of 250 MVA will be exceeded in the year 2022. There is also no space for additional 132 kV feeder bays at Koeberg Substation to accommodate future requirements for new lines.

It is for the aforementioned reasons that a new 400/132kV substation (Weskusfleur Substation) is proposed in the vicinity of the existing Koeberg Substation to:

- Improve the existing 400kV reliability
- Cater for load growth on the 132 kV network for the 20-year horizon.
- Prevent overloading of existing 400kV busbar
- Replace 30 year old technology/equipment

3.2 Development and process followed in determining the proposed footprint (3, g,h)

To improve the reliability of Koeberg MTS, several options were investigated and the option to build a new 2x250MVA, 400/132kV substation in the vicinity of the existing Koeberg GIS substation was the preferred one. The main processes and issues to determine the preferred footprint were mainly the following:

- Build a new 2x250MVA; 400/132kV substation
- Construct the new 400kV busbar with space capability of 3x250MVA, 400/132kV transformation;
- Equip new 2x250MVA, 400/132kV transformers;
- Re-route the Generation transformers to the new 400kV busbar;
- Re-route the outgoing 400kV feeders; as follows-
  - Reroute Acacia-Koeberg 400kV Line 1
  - Reroute Acacia-Koeberg 400kV Line 2
  - Reroute Ankerlig-Koeberg 400kV Line 1
  - Reroute Ankerlig-Koeberg 400kV Line 2
  - Reroute Koeberg-Muldersvlei 400kV Line 1
  - Reroute Koeberg-Stikland 400kV Line 1
- • Re-route the outgoing 132kV feeders; as follows-
  - Reroute Ankerlig-Koeberg 132kV Line 1 to accommodate new 2x500kV line servitudes of 45m each
  - Reroute Blaauwberg-Koeberg 132kV Line 1
  - Reroute Dassenberg-Koeberg 132kV Line 1
  - Reroute Dassenberg-Koeberg 132kV Line 2
  - Reroute Duine-Koeberg 132kV Line 1
- Divert the 400kV Ankerlig Sterrekus line around the yard's position to minimize line crossings;
- Temporary storage of large volumes of transformer oil on site to be deposited into transformers;
- Temporary storage of any hazardous chemical substances to be used during the construction phase;
- The clearance of vegetation as a result of the construction of the substation and associated infrastructure;
- Decommissioning some of the existing substation infrastructure and lines.

It is important to note that the proposed Weskusfleur Subtation is a normal electricity transmission and distribution project and not associated to any nuclear related activities.

3.3 Details of the development footprint alternatives (h,(i)):

In this case three main alternatives were considered during the scoping phase of the project:

- Site alternatives;
- Technical alternatives;
- The "no-go" option.

3.3.1 Site alternatives:

During the scoping process 5 alternative sites were selected for possible development.

- **Alternative 1** – Located at the north-east corner of the KNPS for the 400kV yard and the southern part of the parking area south of the incoming 400kVlines for the 132kV yard.
- **Alternative 2** – The area at the south eastern corner of the KNPS where part of the PBMR was planned.
- **Alternative 3** – The area on the corner of the main access road just east of the road to the conservation offices and north of the main access road south of the incoming 400 kV lines.
- **Alternative 4** – Offsite option to the east of the R27 on the farm Brakke Fontein 32.
- **Alternative 5** – Offsite option, just east of the R304 next to the existing Sterrekus (Omega) Substation.

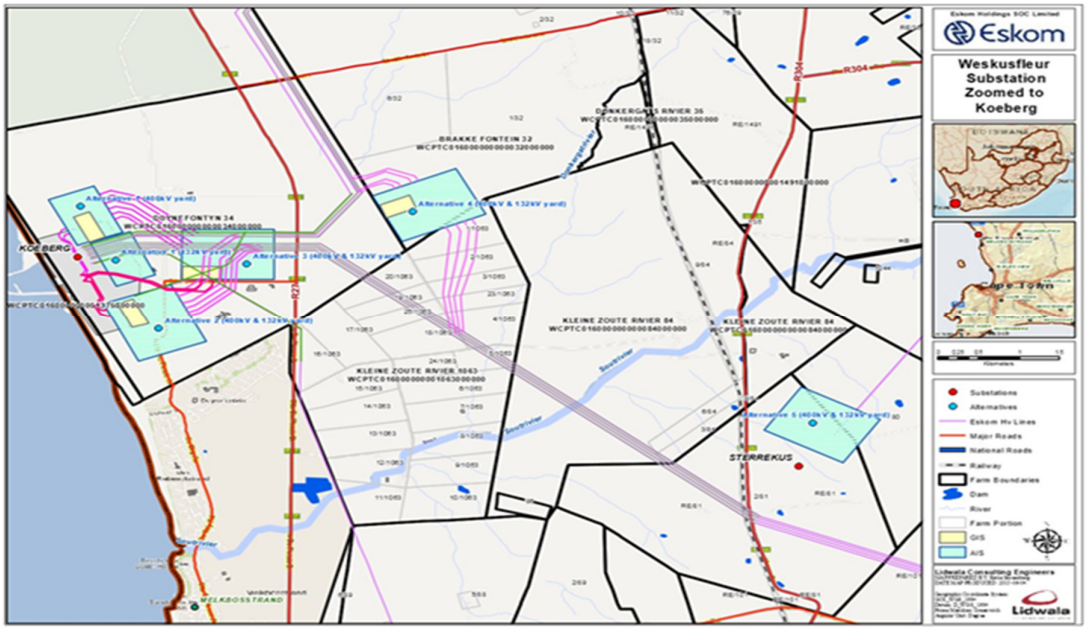

Figure 3:1 The 5 original proposed substation sites

A technical analysis of all the *alternatives* was undertaken the same period when the scoping studies were done. During the scoping public participation process I&APs were allowed to comment on all the proposed *alternatives*. **Alternative 1 GIS and alternative 4 AIS** came out as the most preferable sites to compare**.** The final positioning, design and layout of these alternatives were also considered. The other *alternatives* were deemed technically and/or ecologically unviable. A *GIS alternative* in the parking area has been proposed by the City of Cape Town during the Focus Group meeting on 13 August 2013 although they indicated in their consolidated comment that construction of the GIS on the parking area is not an option as the existing power lines cross the entire parking area and an equally large area to the north of the parking area.

Through the public participation process undertaken during the review of the Scoping Report it was requested by the City of Cape Town that other alternatives should preferably be brought forward in the SR that is technically viable and has a lower impact on the natural environment. The final positioning, design and layout of the preferred alternatives is considered in the EIA phase which will provide more information in terms of their viability and impact on the environment through the input from the specialist studies. A range of alternatives have been brought forward from the inception of this project and various technologies and options (for example 400KV and 132KV substations split AIS configuration as well as GIS combined configuration at *alternative 1* – to reduce the footprint on undisturbed areas in order to have a lower environmental impact) were technically analysed.

The main disadvantages from a technical point of view taking the following into consideration:

- Proximity to the power station – the further away the higher the risk of interruptions and fault possibilities that will immediately shut down the power plant. Site 4 was just acceptable within the proximity fault frequency calculations;
- Transmission lines deviations and additional lines – all alternatives, except for site 1, deviations as well as difficult line crossings are necessary. This also implies increasing the development footprint in sensitive areas;
- Land use issues – new proposed substation should preferably be on Eskom land;
- Room for possible expansion – limited at the sites around Koeberg NPS but possible on the other sites further away.

Longer distance from Koeberg means longer lines from generation transformers to the new yard which will severely impact on the performance in the high marine pollution environment leading to possible faults on the generator transformers.

Therefore one of the main technical considerations was the reliability and proximity to Koeberg NPS. The existing substation is situated right at the power station and replacement in a similar position would fulfil all technical requirements. The costs aspect was also considered and therefore technical alternatives were also considered.

3.3.2 Technical alternatives:

An initial site analysis was completed by Eskom whereby the different locations indicated above have been investigated including the different technology options (GIS and AIS) described above. GIS = Gas Insulated Substation and AIS = Air Insulated Substation.

- GIS

Gas Insulated Substation uses sulphur hexafluoride (SF6) gas which has superior dielectric properties used at moderate pressure for phase to phase and phase to ground insulation. In GIS the high-voltage conductors, circuit breaker interrupters, switches, current transformers, voltage transformers and lightning arresters are encapsulated in SF6 gas inside grounded metal enclosures

The (GIS) contains the same compartments as in the conventional outdoor substations. All the live parts are enclosed in metal housings filled with SF6 gas. The live parts are supported on cast resin insulators. Some of the insulators are designed as barriers between neighbouring modules such that the gas does not pass through them. The entire installation is sub divided into compartments which are gas tight with respect to each other. Thereby the gas monitoring system of each compartment can be independent and simpler.

Figure 3:2 GIS is totally enclosed within a building

- **AIS**

AIS is a conventional open space substation that is constructed according to standardized minimal distances (clearance) between phase and earth. Normally used for outdoor substations and in very few cases used for indoor substations. The substation is based on single power system equipment's and thus replacement of single equipment by equipment's from other manufacturers is possible. The substation is easily accessible and expandable.

Figure 3:3 GIS is an open and thus cooled by the surrounding air

The proposed substation is a 2x2500MVA; 400/132kV substation. The system will be operated at 400kV and 132kV, however the 400kV yard will be insulated at 550kV and the 132kV yard will be insulated at 275kV levels. This was put as a requirement due to the high marine pollution in the area which requires higher insulation levels and the next range of standard equipment freely available to facilitate this is manufactured to the 550 and 275kV levels.

Table 3:1 Overview of the physical/technical requirements

Substation option	Approx. Size (m)	Distance between gantries (m)
400kV + 132kV AIS	760 x 550	75 (400kV) and 50 (132kV)
400kV + 132kV GIS	400 x 180	50 (400kV) and 40 (132kV)
Line size	Servitude width (m)	
400/500kV	45 - 55	
132kV	30	

Taking the technical as well as site alternatives together the scoping process preference was to compare in the EIA phase alternative site 1 (GIS) with alternative site 4 (AIS).

Looking at the footprint for site 1 = 7,2 hectares with hardly any line turn inns that increases the footprint in this already disturbed area.
The footprint for site 4 = 41,8 hectare. The line deviations at this alternative increases the ultimate footprint to 61,15 hectare.

3.3.3 The 'no go' alternative

In the context of this project, the no-go alternative implies that the new 400/132kV substation (Weskusfleur Substation) that will improve the existing 400kV reliability and cater for load growth on the 132 kV network for the 20-year horizon will not be constructed.

The no-go alternative can be regarded as the baseline scenario against which the impacts of the substation are evaluated. This implies that the current biophysical and social/tourism conditions associated with the proposed sites will be used as the benchmark against which to assess the possible changes (impacts) to these conditions as a result of the substation.

In most cases, the no-go alternative will imply that the identified negative impacts of proceeding with the project will not be incurred. Conversely, selection of the no-go alternative will also result in the benefits (including the potential economic development and related job creation, and increased security of electricity supply) of the project not being realised. One of the most important aspects that will not be realised is the increased security of electricity supply.

3.3.4 Process followed to reach development footprint alternatives:

As discussed above the original 5 sites were selected looking at certain criteria which included the distance from the power station. Through the scoping process and the public participation process the 5 proposed sites were reduced to 2 possible and viable alternatives. The footprint size is directly linked to the type of substation design and in the case of the AIS versus GIS the difference is a staggering 34,3 hectare. If the location is added to the equation the line turn-inns play a huge role an add another 19,6 hectare that brings the total to 61.15 hectare. The difference is than 53,95 hectare. The reason that the AIS were not considered for site 1, next to Koeberg, is the size. There is not enough space to accommodate AIS.
Through the public participation process and especially the Cape Departments, advised the EIA team to only look at certain scenarios. This also influenced the number of sites as well as the technology proposed for each site and carried through to the EIA phase. For full public participation process details please see chapter three of this report.

4. Details of the Public Participation Process

4.1 Introduction

The Scoping Phase of an EIA serves to define the scope of the detailed assessment on the potential impacts of a proposed Project. The Environmental Scoping Phase was undertaken in accordance with the requirements of sections 24 and 24D of the National Environmental Management Act (NEMA) (Act 107 of 1998), as read with Government Notices R 543 (Regulations 26-30), 544, 545 and 546 of the NEMA. The objectives of the Scoping Phase are to:

- Ensure that the process is open and transparent and involves the Authorities, proponent and stakeholders;
- Identify the important characteristics of the affected environment;
- Ensure that feasible and reasonable alternatives are identified and selected for further assessment;
- Assess and determine possible impacts of the proposed Project on the biophysical and socio-economic environment and associated mitigation measures; and
- Ensure compliance with the relevant legislation;
- Ensure that the right technical alternatives are assessed;
- That the EIA is focused, right specialist studies done the right impacts identified/verified;
- Identified all possible IAP's that can have a positive and constructive input into the scoping as well as the EIA phase of the project.

4.2 Consultation with Authorities

The relevant authorities required to review the proposed Project and provide an Environmental Authorisation were consulted from the outset of this study, and have been engaged throughout the project process. The competent authority for this project is the National Department of Environmental Affairs (DEA). The Western Cape Department of, Environment and Development planning (DEA&DP) and the City of Cape Town are noted as the key commenting authority.

Authority consultation included the following activities:

- Submission of an application for authorisation in terms of NEMA (Act 107 of 1998) on **13 March 2013**

Following the submission of the application for authorisation DEA acknowledged receipt thereof in the form of an Acknowledgement of Receipt letter (dated **27 March 2013**, see **Appendix B**). The DEA reference number allocated to this application is **14/12/16/3/3/2/508** and the NEAS Reference Number is **DEA/EIA/0001780/2013**.

The authorities include *inter alia*:

- Western Cape Department of, Environment and Development planning (DEADP)
- Department of Water Affairs;
- City of Cape Town Metropolitan Municipality;
- Cape Nature Conservation;
- Heritage Western Cape;
- Department of Energy;
- Department of Transport and Roads;
- Department of Public Works;
- Department of Agriculture Forestry and Fisheries; and
- South African Heritage Resources Agency (SAHRA) – head office.

4.2.1 Overview of the Public Participation Process

A comprehensive Public Participation Process (PPP) was implemented as part of the Scoping Phase of the EIA. The PPP aims to:

- Ensure all relevant stakeholders and I&APs were identified and invited to engage in the scoping process;
- Raise awareness, educate and increase understanding of stakeholders and I&APs about the proposed Project, the affected environment and the environmental process being undertaken;
- Create open channels of communication between stakeholders and the project team;
- Provide opportunities for stakeholders to identify issues or concerns and suggestions for enhancing potential benefits and to prevent or mitigate impacts;
- Accurately document all opinions, concerns and queries raised regarding the Project; and
- Ensure the identification of the significant alternatives and issues related to the Project.

(a) Identification of stakeholders or I&APs

The identification and registration of I&APs is an ongoing activity during the course of the EIA. Please note however that only a registered I&AP is entitled to comment, in writing, on all written submissions made to the competent authority by the applicant or the EAP managing an application, and to bring to the attention of the competent authority any issues which that party believes may be of significance to the consideration of the application, provided that comments are submitted within the timeframes that were approved or set by the competent authority or any extension of a timeframe agreed to by the applicant or Environmental Assessment Practitioner (EAP). Lidwala EPS developed, maintain and constantly updated an electronic I&AP database for the Project (see **Appendix C**). I&APs for this Project were identified using the following:

- Existing I&APs databases from other projects in the area;
- I&APs identified through networking by the project team;
- Placement of newspaper advertisements in the Cape Times, Weskusnuus and the Table Talk. The advertisements were placed during the week of **22- 26 April 2013;**
- Placement of site notices at the proposed site locations;
- Distribution of Background Information Documents (BIDs);
- Discussions with community leaders and relevant ward councillors;
- Completed comments sheets; and
- Attendance registers at meetings.

All comments and issues submitted by I&APs during the course of the EIA were recorded in a comment and response report.

Summary of issues raised and how are they incorporated:

Since the inception of the proposed construction of the Weskusfleur project Lidwala received a few correspondence from interested and affected parties (I&APs). The majority of the people who contacted Lidwala requested to be registered on the project's database, kept informed of the status of the project and requested additional information to be sent to them. Some I&APs gave inputs on the site alternatives that were identified and investigated during the scoping phase of the project. I&AP and stakeholders highlighted and informed Lidwala of the, current projects and activities currently taking place within the identified areas (and surroundings), possible impacts that could arise due to this project on any of the site alternatives, they want the EIA process to critically assess these alternatives.

Comments and issues received from I&APs during the scoping phase are recorded in a comment and response report, which forms part of this DEIR.

I&AP comments were responded to as far as possible, with some comments/recommendations being investigated to advise this EIA.

(b) Notification and Advertisements

In accordance with the requirements of the NEMA EIA Regulations, the Project was advertised in regional newspapers. The purpose of the advertisement was to notify the public about the proposed Project and to invite them to register as I&APs (see **Appendix D**). The relevant advertisement dates undertaken during Scoping is listed in **Table 3.1** below.

Table 4:1 Date on which the EIA notification adverts were published

Newspaper	Publication Date	Language
Cape Times	25 April 2013	Afrikaans and English
Weskusnuus	24 April 2013	English and Afrikaans
Table Talk	25 April 2013	Afrikaans and English
Cape Times	26 May 2015	English
Weskusnuus	26 May 2015	Afrikaans and English

Note that the final scoping report did not change in process or contend except the explanation why it is advertised again nearly 2 years later. This is because the process was halted during late 2013 due to restrictions on any further applications for development on specifically Cape Farm 34, one of the alternative sites for the proposed new substation.

The Project, the environmental impact assessment process was widely announced with an invitation to the general public to register as I&APs and to actively participate in the PPP. This was achieved by using:

- Print media advertisements in English and Afrikaans that were placed in the Cape Times, Weskusnuus and the Table Talk newspapers for the scoping phase;
- Key Stakeholders were contacted telephonically and informed of the Project and the EIA process;
- A Background Information Document (BID) and comment sheet was compiled in English and Afrikaans detailing the proposed Project and explaining the EIA process. The BID was emailed and posted to I&APs;
- Copies of the BID were made available to I&APs as and when requested. Public documents were also made available in public libraries and other local public venues.

General project notices were erected at various public places in and around the study area (**Appendix D**). The official site notices were erected as per the NEMA EIA Regulations at all five alternative sites identified.

A second round of advertisements was published in order to notify the public about the availability of the Draft Scoping Report as well as to invite the public to attend the Public Meetings. The advertisement reflected the date and venue where the Public Meetings were to take place (see **Appendix D**).

(c) Background Information Document

The Background Information Document (BID) that briefly describes the proposed Project was compiled in English and Afrikaans and was distributed to all identified I&APs. The BID introduces the proposed Project and contains background information on the Project, the proponent, consultants and proposed process to be followed. It also includes a locality map, and a registration/comment sheet inviting I&APs to submit details of any issues, concerns or inputs they might have with regards to the proposed Project. The BID was distributed via e-mail and post to the I&APs identified through networking and was also distributed to the attendees at the Public Meetings including the placement in public locations indicated in **3.3.2**.

(d) Meetings

A Public meeting were held during the review period of the draft Scoping Report. One-on-one interactions were also held as required. The purpose of these meetings was to present the I&APs with information pertaining to the Project and the process being followed, as well as to document and discuss any issues which the public wish to raise.

Invitations to the Public Meeting and open day were extended in advertisements, letters, telephone and public notices at numerous relevant public places. In addition to the public meeting key stakeholder focus group meetings have also been undertaken. **Table 3.2** provides the date and venue where the public meeting, open day and key stakeholder focus group meetings were held and an indication of attendance.

Table 4:2 Public Meetings

Date	Type of Meeting	Venue	Attendance
13 August 2013	Focus Group Meeting with the City of Cape Town & Cape Nature	Milnerton Library Auditorium	7 members of the City of Cape Town and one from Cape Nature
13 August 2013	Public Meeting	Koeberg Visitors Centre	No members of the public
14 August 2013	Focus Group Meeting with the Western Cape Department of Environmental Affairs and Development Planning	DEA&DP 7th Floor Boardroom, Utilitas Building, 01 Dorp Street, Cape Town	3 Members of DEA&DP
14 August 2013	Open Day	Koeberg Visitors Centre	No members of the public
15 August 2013	Landowner Focus Group Meeting		3 members

	Alternative 4		

Minutes of meetings held with I&APs were taken and were forwarded to the attendees for verification of their issues. The minutes of the consultation were within the Final Scoping Report. The comments raised during the public participation process described above, were recorded in the Comment and Response Report and were included in the Final Scoping Report.

(e) Ongoing Consultation and Engagement

In addition to the public documents distributed to I&APs, there will be ongoing communication between the applicant, the EIA team and I&APs throughout the EIA process. These interactions include the following:

- In addition to the project announcement letters, a letter will be sent out to all registered I&APs providing them with an update of the Project once the Scoping report has been approved;
- Interactions with I&APs will take place in English and Afrikaans where required;
- Feedback to stakeholders, individually and collectively;
- Written responses (email, faxes and letters) will be provided to I&APs acknowledging issues and providing information requested (dependent on availability);
- As per the NEMA EIA regulations, particular attention will be paid to landowners, and neighbouring communities, specifically where literacy levels and language barriers may be an issue.

The consultation with all stakeholders and I&APs will continue into the Impact Assessment and EMP phase. Consultation will continue and will include:

- Distribution of all project information and findings to I&APs;
- EIA feedback open days and public meetings; and
- Information in the media and press.

4.2.2 Public Review of the Draft Environmental Scoping Report

The draft Environmental Scoping Report was made available for review for a period of **41 calendar days** from **24 July 2013** to **2 September 2013** at the following public locations within the study area, which are readily accessible to I&APs:

- Koeberg Public Library
- Milnerton Library
- Wesfleur Public Library
- Koeberg Visitor Centre

- Lidwala Website

The availability of the draft Environmental Scoping Report was advertised in the following newspapers on **23rd and the 24th of July 2013** (**Appendix E**). **It was again advertised in the newspapers on 26 May 2015 for the second round of review due to the project process stoppage during late 2013.**

- Cape Times
- Table Talk (During 23/24 July 2013)
- Weskusnuus

All registered I&APs were notified of the availability of the report in writing. Comments received during the review period were included in the comment and response report (**Appendix E**).

4.2.3 Final Environmental Scoping Report

The final stage in the Environmental Scoping Study process entails the capturing of responses and comments from I&APs on the draft Scoping Report in order to refine the Environmental Scoping Report, and ensure that all issues of significance are addressed. The final Environmental Scoping Report was submitted to DEA for review and decision-making. **It was however rejected due to the restrictions placed on any further applications for development on Cape Farm 34. This was a condition that formed part of the Environmental Authorization (EA) for the Administrative centre and training campus EIA on Cape Farm 34.**

4.2.4 Draft Environmental Impact Assessment Report

On 26 June 2015 the Department: Environmental Affairs (DEA) accepted in writing the final scoping document as well as the plan of study for the EIA. A specialist integration workshop took place on 23 July 2015 where all the specialists presented their findings. Through a rigorous process the importance of each field of expertise were given a weighting. The process of selecting the preferred site by integration of all this information is discussed in chapter 5.

The availability of the draft EIA report (DEIAR) was advertised in the same newspapers as well as the dates for the DEIAR public and focus group meetings.

The newspapers:

- Cape Times
- Table Talk
- Weskusnuus

The public and focus group meetings were scheduled and advertised as follows:

Table 4:3 Public Meetings

Date	Type of Meeting	Venue	Attendance
2 September 2015	Open Day	Koeberg Public Library	Will be completed in Final EIA
	Public Meeting	Koeberg Visitors Centre	
3 September 2015	Open Day and Public Meeting	Duynefontein Public Library	Will be completed in Final EIA

4.3 Conclusion

This chapter discussed the various tasks that were undertaken as part of the scoping and EIA phases of the EIA process. The Environmental Scoping and EIA Phase was undertaken in accordance with the requirements of sections 24 and 24D of the National Environmental Management Act (Act 108 of 1998), as read with Government Notices R 543, 544, 545 and 546 of the NEMA.

5. ENVIRONMENTAL ATRIBUTES ASSOCIATED WITH THE DEVELOPMENT FOOTPRINT

An *attribute* is a quality or characteristic given to the area within which the proposed substation is planned. In general site 1 and 4 are located as described in the earlier chapter. Through the scoping process and discussions with various specialists and their studies outcome it is clear that in general terms this environment can be classified as highly sensitive. The following aspects are briefly discussed and relevance highlighted for each site (1 and 4) but detailed descriptions can be found in the specialist reports.

5.1 Topography

Alternative site 1:

The study area slope is generally flat with a gradient of approximately 1.0%-1.5%. The area earmarked for the proposed substation development occurs at heights varying between 19m and 24m above mean sea- level. The proposed development footprint would be cut into the above slope. No natural surface drainage features are evident in the area and much of the surface runoff would seep into the underlying gravels and migrate down gradient beneath the surface.

Figure 5:1 Alternative 1 with the reactor units in the background. View facing south. Blouberg Hill and Table Mountain can be seen in the distance

Alternative site 4:

The study area slopes is generally flat, with a gradient of approximately 0.9%. The area earmarked for the proposed substation development occurs at heights varying between
36m and 38m above mean sea- level. The proposed development footprint would be cut into the above slope. No natural surface drainage features are evident in the area and much of the surface

runoff would seep into the underlying dune sand and migrate down gradient beneath the surface. The loose nature of the surface sands makes vehicular access outside of the existing roads almost impossible without four wheel drive capability.

Figure 5:2 Alternative 4. View of the proposed site facing North West. Note the very dense vegetation cover which mainly consists of invader species.

5.2 Climate – for both sites

The area has a temperate, Mediterranean-type climate with about 75% of the annual rainfall occurring in the winter months between April and September. Rainfall is cyclonic due to cold fronts moving in from the South Atlantic Ocean. The cold Benguela current inhibits cloud development. The average annual rainfall measured at the Koeberg Nuclear Power Station is 375 mm/a.

Summers are hot and dry with an average temperature of 28°C between January and March. Winter months are cold and wet with an average temperature of 17°C during July. Wind which is a characteristic feature of the West Coast can often be very strong.

Fog is a regular occurrence along the West Coast during the summer months and can drift as far as 3 km inland. The moisture supplied by the fog compensates for the relatively poor rainfall during the summer months.

The long-term averages and extremes measured from 1980 to 2012 at the Koeberg Meteorological Station is shown in **Table 5.1**.

Table 5:1 The long-term averages and extremes measured from 1980 to 2012 (Source: Koeberg Meteorological Station)

Koeberg Meteorological Station

Long-Term Averages and Extremes @ 10m agl. - Average period = 1980 to 2012

Month	Temperatures (°C)					Rainfall (mm) @ 1.2m							Wind				
	Avg.	Extreme Max.	Year	Extreme Min.	Year	Avg.	Highest	Year	Lowest	Year	Highest 24hrs	Year	Avg. m/s	Gust Dir.	Max. Gust m/s	Max Gust km/hr	Year
January	19.6	38.1	2004	10.5	1982	9.4	67.6	1981	0.0	1999	57.4	1981	5.0	NNW	27.7	99.7	2008
February	19.8	38.0	2005	9.0	1980	7.8	42.0	1996	0.0	2000	26.4	1996	4.7	NNW	24.3	87.5	2008
March	18.8	36.6	2004	9.0	1989	11.9	51.0	1989	0.0	2001	33.8	1988	4.3	NNW	23.4	84.2	1993
April	16.9	36.6	2012	5.5	1995	32.9	105.4	1990	2.8	2000	62.0	1993	3.7	S	37.1	133.6	1993
May	15.1	33.6	1986	5.7	1995	46.6	98.2	1987	1.3	2004	49.3	1993	3.5	WSW	38.8	139.7	1987
June	13.5	31.4	1985	4.1	1988	67.3	157.4	1994	25.8	1984	58.2	1996	3.7	E	34.4	123.8	1994
July	13.0	29.0	1980	2.8	1995	64.8	162.4	2001	22.8	2005	59.4	1985	3.9	WSW	30.6	110.2	2000
August	13.2	32.0	1985	2.2	1981	54.1	134.4	1987	13.8	1991	57.6	1987	4.0	WSW	31.2	112.3	2008
September	14.3	38.2	2005	2.3	1989	33.9	75.0	1984	2.5	1993	34.6	1999	4.2	WSW	30.6	110.2	1991
October	15.8	37.2	1985	5.4	1990	18.8	114.8	2004	0.6	1993	50.4	2004	4.5	NNW	26.5	95.4	1992
November	17.2	36.3	1988	6.3	1998	16.3	67.8	2009	0.4	2003	35.7	2008	4.8	SSE	27.8	100.1	1991
December	18.8	37.4	2002	9.6	1988	12.2	32.8	1984	0.3	2005	17.0	1984	4.8	ESE	36.9	132.8	2002

5.3 Geology for both sites

According to the available geological maps, 1:250 000 Geological Series 3318 CAPETOWN map the regional geology of the sites comprise of light grey calcified dune sand and calcrete (**Ql**) on Alternative 1 & 2 and becoming white to light grey calcareous sand(**Qw**) bordering to **Qs** on Alternative 3 ; light grey to pale-red quartzose sand and dune sand(**Qs**) on Alternative 4 & 5.

According to the Council for Geoscience (CGS) **Figure 5.3** below all sites are underlain by Aeolian dune sand which are up to several depths of metres. From the author's experience, this layer could be up to +- 35m below the surface. Below this layer (>35m), clayeys soils with low to medium potential of expansiveness may be expected but this will have no effect on the proposed development as the horizon depth and thickness contribute towards determining the amount of surface movement (expansion and contraction).

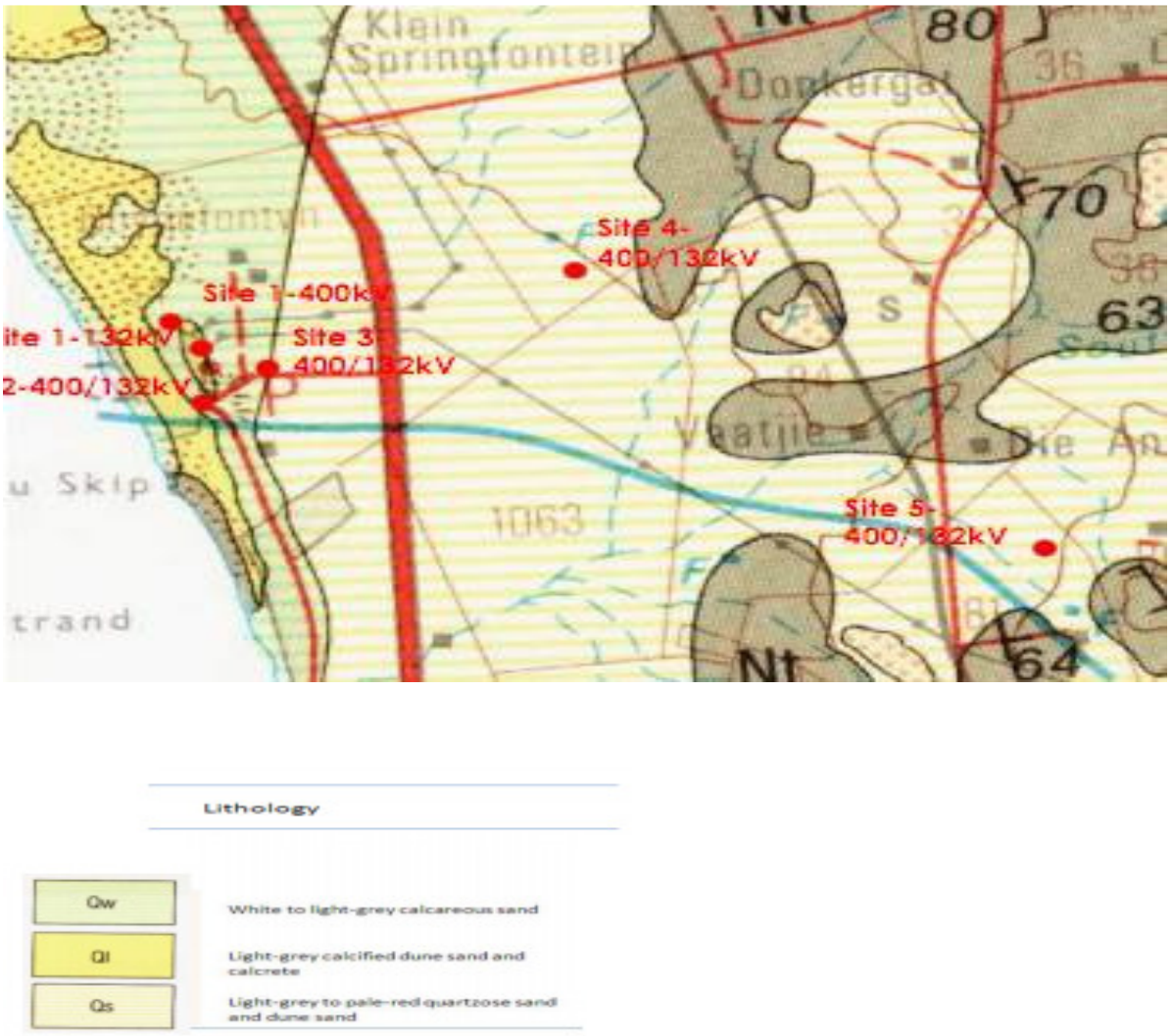

Figure 5:3 Regional Geology – Koeberg Substation

5.4 Natural Vegetation

The proposed Weskusfleur Substation is located in within the Cape Flats Dune Strandveld and Atlantis Sand Fynbos vegetation types which are classified as Endangered and Critically Endangered. A large number of listed flora occur in the area and these species are likely to be impacted on by any development within the natural vegetation of the site.

National Vegetation Types

Alternative 1:

According to the national vegetation map (Mucina & Rutherford 2006), the alternative 1 close to the power station falls within the Cape Flats Dune Strandveld Vegetation type. This vegetation type has an extent of 138 km^2 and occurs in several discontinuous patches on dune fields of the Western

Cape. The largest patch spans the south coast of False Bay and penetrates deep into the Cape Flats as a broad wedge as far north as Bellville, the other patch spans Silverstroomstrand and Table Bay and includes the Atlantis dune plume, the third region is a series of small patches covering coastal dune pockets on the Cape Peninsula, while the last patch is on Robben Island. This vegetation type is classified as Treatened. An estimated 43% of the original extent remains and only 6% is currently conserved. A total of 66 Red Data plant species and 1 endemic plant species are known from the vegetation type. The high number, of species of conservation concern known from this vegetation type suggest that such species are likely to be present in most existing remnants of Cape Flats Dune Strandveld. The GIS for *Alternatives 1* is largely within the disturbed area adjacent to the power station. For full description consult the specialist report in **Appendix F.**

Alternative 4:

Occurs on Atlantis Sand Fynbos which has a total extent of 433 km^2 and occurs from Rondeberg to Blouberg on the West Coast coastal flats; along the Groen River on the eastern side of the Dassenberg-Darling Hills through Riverlands to the area between Atlantis and Kalbaskraal, as well as between Klipheuwel and the Paardeberg with outliers west of the Berg River east and north of Riebeek-Kasteel between Hermon Heuningberg. Atlantis Sand Fynbos is associated with moderately undulating to flat sand plains with dense, moderately tall, ericoid shrubland dotted with emergent, tall sclerophyllous shrubs and an open short restiod stratum. Restioid and proteoid fynbos are dominant, with asteraceous fynbos and patches of ericaceous fynbos in seepages. *Alternatives 4* lies within areas that have are intact Atlantis Sand Fynbos. This vegetation type is classified as Critically Endangered. An estimated 51% of this vegetation type remains and only 6% is currently conserved. A total of 84 endemic species and 6 vegetation-type endemic species are known from this vegetation type. The high conservation status and large number of listed species known from this vegetation type indicate that any further loss and transformation of this vegetation type is highly undesirable.

Critical Biodiversity Areas & Braod-Scale Ecological Processes

The site lies within the planning domain of the Cape Town City Biodiversity Network which was developed by the City of Cape Town (Holmes, Stipinovich & Purves 2012) on an iterative basis since 2001. Although a large proportion of the Koeberg property has been proclaimed as part of the Koeberg Private Nature Reserve (**Figure 5.4**), the area around the power station itself is not part of the reserve and consequently *alternatives 1* actually fall within the Nature Reserve itself. In addition, Eskom signed a binding stewardship agreement for Koeberg property.

Alternative 4 is very heavily invaded by alien acacias to the detriment of biodiversity.

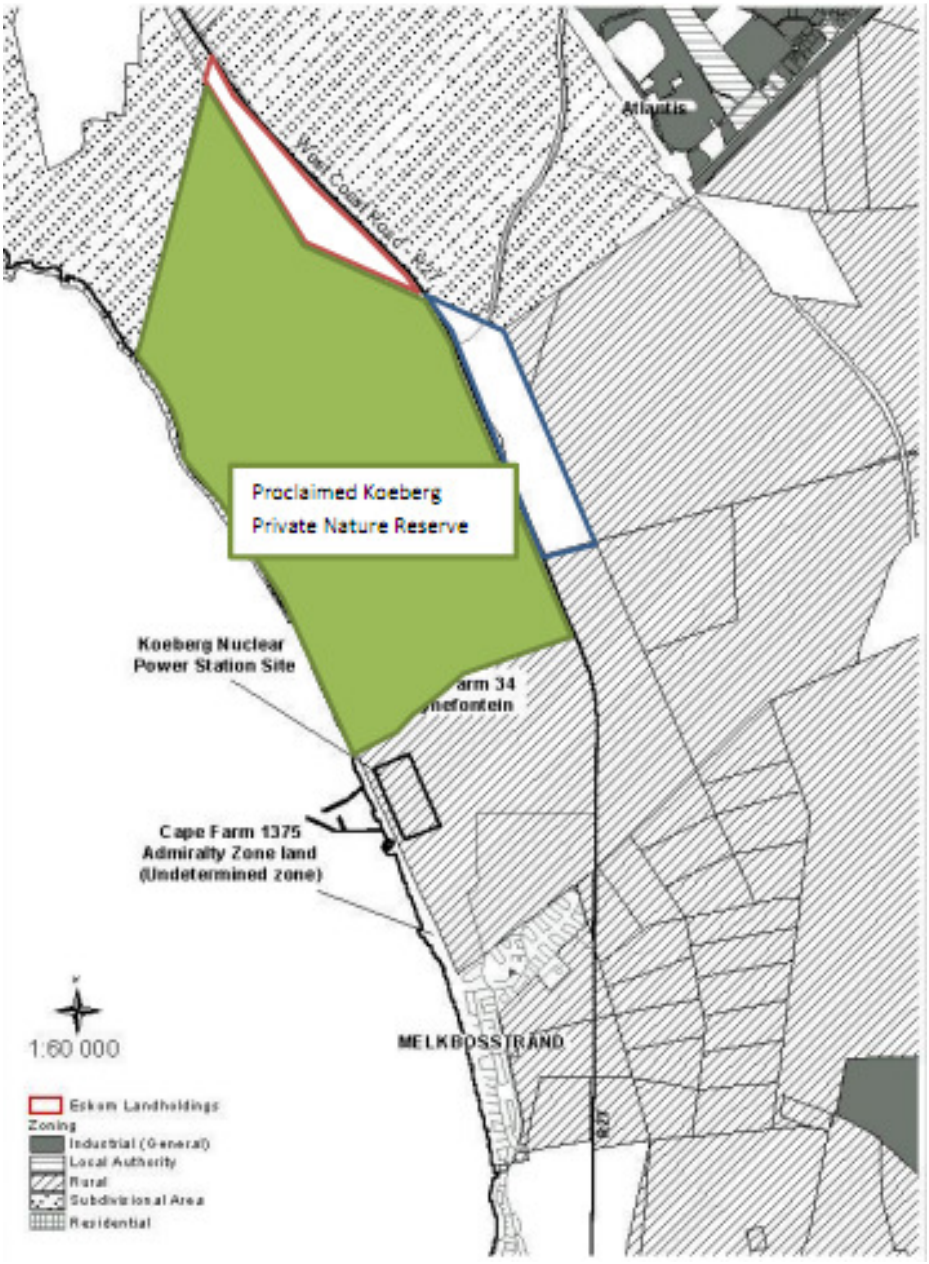

Figure 5:4 Private Nature Reserve – Consolidated property now called Farm Duynefontyn 1552.

For a full description on mammals, reptiles, amphibians and avifauna consult the full specialist report in **Appendix F.**

5.5 Surface Water

Quaternary Catchment

The alternatives, 1 and 4, falls within the quaternary catchment G21B and in the Berg Water Management Area (WMA). Other catchments in the radius of the alternatives include G21A and G21F.

The water resources within the vicinity of the project alternatives include:

- Sout River; and
- Donkergat River; and
- Diep River

All these rivers are perennial. The Donkergat River is a tributary of the Sout River. The Sout and Diep River flow in a south-westerly direction towards the coast. No river channels drain the sites of the two alternatives. No dams or reservoirs are present in the study area.

Mean Annual Runoff

The mean annual precipitation (MAP) in the area is 200-400mm (UPD). The National Water Resource Management Strategy (2004) indicated that the MAR is 207mm for the Lower Berg Sub Area (**Table 5.2**). The quaternary catchment G21B MAP is 424mm.

The Mean Annual Runoff (MAR) for the primary watercourses draining the nearby catchments is 32 mm/a.

Table 5:2 The natural MAR for the Berg River WMA (Source: DWA 2004)

Component/ Sub-area	Natural MAR[1]	Ecological Reserve[1,2]
Greater Cape	373	61
Upper Berg	849	124
Lower Berg	207	32
Total for WMA	**1 429**	**217**

Quantities are incremental and refer to the sub area under consideration only.
The total volume is based on preliminary estimates, with impact on yield being a portion of this.

Information from the previous studies (based on proximity to alternatives for this study) indicates the following calculated peak flows (m^3/s):

Table 5:3 Peak flows (m^3/s) adapted from previous assessments

Return Period	Alternative 1	Alternative 4
1:50	3.45	5.06
1:100	3.91	5.74
1:200	4.41	6.46

(Adapted from SRK Consulting 2008 & Eyethu Engineers 2004)

These peak flows have been calculated using the Rational Method and are indicative of the expected runoff downstream.

Wetlands

The location of wetlands on the sites and the extent thereof and their significance as well as their biological diversity has been determined in previous studies (PBMR and Nuclear 1) for example. A separate specialist study was done and none will directly impact any of the two sites. **Figure 5.5** indicates the location of wetlands on the Koeberg Nuclear Power site.

Figure 5:5 *The location of wetlands on the Koeberg Nuclear Power site (*Source The Fresh Water Consulting Group)

None of these wetlands are located on one of the proposed alternatives.

5.6 Heritage

Cultural heritage

According to Hart (2010), Hermanus Dempers (1799) was the first owner of Duynefontein, but it is unclear who the first grantee was. Tenants were apparently awarded certain land rights in 1731, and paid rent to the Cape Government at the time. When the property was surveyed in 1834, there is no indication of houses or any built structures. Hart (2010) has argued that Duynefontein is not a farm that played any significant role in the Colonial history of the Cape.

Brakke Fontein No. 32/1 (*Alternative 4*) was first granted in 1855, but it is likely that the area, which included a number of other farms, was already inhabited during Dutch reign in the Cape sometime between 1652 and 1759. According to Geldenhuys (2012), it appears that the farm was used as, a cattle grazing farm when it was first granted. Geldenhuys (2012) notes that the whole area was called Slagtersvled during that time as Governors from the Dutch East India Company (VOC) used to send out hunters on their behalf to hunt behind the `Blaauwe Berg'.

Fossil heritage

Fossiliferous deposits dating to the Miocene period (5-6 million years ago according to the current paradigm) were first encountered during geo-technical excavations at the KNPS in the 1970s, and in the years since then, Duynefontein has been firmly established `as a highly sensitive (paleontological) site' (Hart 2010).

Fossiliferous marine gravels, known as the `Duynefontein Member' of the Varswater Formation contain a diversity of fossils including teeth, bones and scales of sharks, rays and bony fish, fossil whale bone, dolphin and seal teeth, marine birds, terrestrial mammals, and reptiles. Plant pollens in thin peaty sands cap the Varswater Formation.

Archaeological heritage

But it is undoubtedly the archaeological excavations at Duynefontein 2, north of the KNPS that established the name as a `place of world class scientific discovery' (Hart 2010:27). The site was first discovered in 1973 when fragments of fossil bone were uncovered during geotechnical excavations for the power station and has been excavated annually between 1998 and 2003. Duinefontein 2 produced a wealth of Pleistocene fauna (about 300 000 years old), and associated MSA implements on old buried land surfaces (Cruz-Uribe et al 2003; Klein et al 1999).

Hart (2010 and 2013 pers. comm.) argues that Duinefontein 2 was not a fortuitous discovery, and that similar deposits lie buried beneath the windblown sands of the Witsand Formation, in what he calls the Nuclear - 1 Corridor both north and south of the reactor, in which site *alternatives 1* and *2* are proposed.

Burials

While no unmarked or buried pre-colonial human remains have yet been uncovered at Duynefontein/KNPS, Melkbosstrand has produced an extremely high density of burials (Morris 1992). To date more than 55 Khoisan human remains have been recovered from the coastal dunes between Milnerton and Melkbosstrand (Kaplan 2013; Orton 2010). Two burials associated with stone tools and ostrich eggshell beads were also excavated from a large sand dune on the farm Groot Oliphantskop (Kaplan 1996). Most of the unmarked human remains were routinely uncovered during excavations for water pipelines, substations, building foundations, roads and other bulk services.

5.7 Social Environment

The study area falls within the Western Cape Province between Blouberg and Atlantis. The distance of towns from the Koeberg Power Station is: Blouberg = 17,2km, Atlantis = 12,6km, Melkbosstrand = 5,5km and Duinefontein = 2, 2 Km. The R27 (provincial road) is located just south of Koeberg.

The total population of City of Cape Town is 3 740 025 as of 2011 growing at about 2.6% per annum. The local population has a youthful age structure and the immediate significance of this young age structure is that the population will grow rapidly in future and this implies a future high growth rate in the labour force. At present the local economy is unable to provide sufficient employment opportunities to meet the needs of the economically active population. A youthful population structure also implies a relatively higher dependency ratio.

There are 1 068 572 households in the Municipal area. The Municipality is made up of 28 suburbs and townships which are Atlantis, Bellville, Blue Downs, Blouberg, Bracken fell, Cape Town, Crossroads, Durbanville, Eerste Rivier, Elsie's, Elsie's River, Fish Hoek, Goodwood, Gordon's Bay, Guguletu, Hout Bay, Khayelitsha, Kraaifontein, Kuils River, Langa, Melkbosstrand, Mfuleni, Milnerton, Mitchell's Plain, Noordhoek, Nyanga, Parow, Simon's Town, Somerset West Strand. The main administrative office is situated in Cape Town City.

Key Developmental challenges and trend

- Urbanisation -Cape Town is experiencing rapid urbanisation as a result of both natural growth and in-migration. The city's population expanded by 36,4% between 1999 and 2007, and growth in 2010 was estimated at 3% per annum
- Natural and cultural environment and resource capacity- the rapid increase in the population rate puts pressure on the resources, such as water, electricity and sanitation
- The population growth rates tend to be much higher than the economic growth rate, which implies that the economy is unable to produce sufficient employment opportunities to absorb new entrants to the labour market.

Spatial Location and Description and the Economy

The City of Cape Town Metropolitan Municipality is located in the Western Cape Province. The municipal area is 2,461 km² in size and strategically located on a macro scale on the west coast which is a point of entry to South Africa from the entire world. Approximately 3 740 025 (2011 census) people currently live in City of Cape Town which is classified as a Urban Municipality with a density of 67 persons/km². The Municipality's spatial strategies and land use management decisions are based on the spatial trends, analysis and the land use management scheme. The following spatial issues will be analysed: Land use, Engineering services and Transportation

The City's economy does not operate within municipal boundaries. Cape Town's economy is interdependent with that of the province, and more specifically, the cities and towns that are within a 50 km radius of Cape Town. A review conducted in 2008 by the Organisation for Economic Co-operation and Development (OECD) defines a broad area (including Saldanha, Malmesbury, Paarl, Stellenbosch and Hermanus) as the city's functional region. Key regional economic interdependencies include a commuting labour force, shared consumer catchment area, transport infrastructure, and a second port located at Saldanha, as well as the agricultural and tourism areas surrounding the city.

As the regional market is relatively small in global terms, linkages to national and international markets are important for city firms. These connections and the efficiency of the port, airport and other city logistics systems are thus critical for economic growth. External freight movement is dominated by land-based freight to and from Gauteng. Approximately ten times more freight enters or leaves the city along the N1 corridor than along the N2 or N7 corridors.

The other major regional infrastructure in Cape Town includes Cape Town International Airport (CTIA). As the airport becomes busier and expands its capacity, the demand it places on infrastructural land-side support systems is increasing, and its environmental health implications for surrounding land uses may become cause for concern.

6. METHODOLOGY USED DETERMINING IMPACTS RISKS & SITE SELECTION

6.1 Purpose of the Plan of Study for EIA

The requirements of Regulation 28 of Government Notice R.543 promulgated in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998) are as follows:

- A description of the tasks that will be undertaken as part of the environmental impact assessment process, including any specialist reports or specialised processes, and the manner in which such tasks will be undertaken;
- An indication of the stages at which the competent authority will be consulted;
- A description of the proposed method of assessing the environmental issues and alternatives, including the option of not proceeding with the activity;
- Particulars of the public participation process that will be conducted during the environmental impact assessment process; and
- Ensure compliance with the relevant legislation.

6.2 Environmental Impact Phase

Introduction

The purpose of the Impact Assessment Phase of an EIA is as follows:

- Address issues that have been raised during the Scoping Phase;
- Assess alternatives to the proposed activity in a comparative manner;
- Assess all identified impacts and determine the significance of each impact; and
- Formulate mitigation measures.

Numerous acceptable approaches and methodologies exist by which the above purpose can be achieved. The legislation in South Africa, including the guideline documents published in support thereof, does not provide a specific methodology for the assessment of impacts. Rather, an assessment framework is provided within which environmental assessment practitioners are expected to structure a project-specific assessment methodology. This assessment framework recognises that there are different methodologies available for assessing the impact of a development but that the specific methodology selected must provide for the following:

- A clear process for impact identification, prediction and evaluation;
- The specification of impact identification techniques;
- Criteria for evaluating the significance of impacts;
- The design of mitigation measures to address impacts;
- Defining types of impacts (direct, indirect and/or cumulative); and

- Specification of uncertainties.

6.3 Impact Assessment Methodology

The objective of the assessment of impacts is to identify and assess all the significant impacts that may arise as a result of the proposed Weskusfleur substation and associated infrastructure. The process of assessing the impacts of the project encompasses the following four activities:

- Identification and assessment of potential impacts;
- Prediction of the nature, magnitude, extent and duration of potentially significant impacts;
- Identification of mitigation measures that could be implemented to reduce the severity or significance of the impacts of the activity; and
- Evaluation of the significance of the impact after the mitigation measures have been implemented i.e. the significance of the residual impact.

The possible impacts associated with the project were primarily identified in the Scoping Phase through on-site and desktop study and public consultation. In the Impact Assessment Phase, additional impacts will be identified through the more in-depth specialist investigations to be undertaken and through the ongoing consultation process with interested and affected parties.

In accordance with Government Notice R.543, promulgated in terms of section 24 of the National Environmental Management Act, 1998 (Act 107 of 1998), specialists will be required to assess the significance of potential impacts in terms of the following criteria:

- Cumulative impacts;
- Nature of the impact;
- Extent of the impact;
- Intensity of the impact;
- Duration of the impact;
- Probability of the impact occurring;
- Impact non-reversibility;
- Impact on irreplaceable resources; and
- Confidence level.

Issues were assessed in terms of the following criteria:

- The **nature**, a description of what causes the effect, what will be affected and how it will be affected;
- The physical **extent**, wherein it is indicated whether:

- 1 - the impact will be limited to the site;
- 2 - the impact will be limited to the local area;
- 3 - the impact will be limited to the region;
- 4 - the impact will be national; or
- 5 - the impact will be international;

➢ The duration, wherein it is indicated whether the lifetime of the impact will be:

- 1 - of a very short duration (0–1 years);
- 2 - of a short duration (2-5 years);
- 3 - medium-term (5–15 years);
- 4 - long term (> 15 years); or
- 5 - permanent;

➢ The magnitude of impact on ecological and sociological processes, quantified on a scale from 0-10, where a score is assigned:

- 0 - small and will have no effect on the environment;
- 2 - minor and will not result in an impact on processes;
- 4 - low and will cause a slight impact on processes;
- 6 - moderate and will result in processes continuing but in a modified way;
- 8 - high (processes are altered to the extent that they temporarily cease); or
- 10 - very high and results in complete destruction of patterns and permanent cessation of processes;

➢ The probability of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale where:

- 1 - very improbable (probably will not happen;
- 2 - improbable (some possibility, but low likelihood);
- 3 - probable (distinct possibility);
- 4 - highly probable (most likely); or
- 5 - definite (impact will occur regardless of any prevention measures);

➢ the significance, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high;

- ➢ the **status**, which is described as either positive, negative or neutral;
- ➢ the degree to which the impact can be reversed;
- ➢ the degree to which the impact may cause irreplaceable loss of resources; and
- ➢ the degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:

S = (E+D+M)*P; where
S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance weightings** for each potential impact are as follows:

Table 6:1 Significance rating

Points	Significant Weighting	Discussion
< 30 points	Low	where this impact would not have a direct influence on the decision to develop in the area
31-60 points	Medium	where the impact could influence the decision to develop in the area unless it is effectively mitigated
> 60 points	High	where the impact must have an influence on the decision process to develop in the area with high risk

This EIA Report assesses the significance of impacts for all phases of the project i.e. construction, operation and decommissioning. The results of the above will be summarised in a tabular format. An example is provided below.

Table 6:2 Summary of impact ratings as example

Potential Impact	Mitigation	Extent (E)	Duration (D)	Magnitude (M)	Probability (P)	Significance (S=(E+D+M)*P)		Status (+ve or -ve)	Confidence
CONSTRUCTION PHASE									
BIODIVERSITY									
Impact 1: Loss or degradation of natural/ pristine habitat Koeberg Nature	**nature of impact:**	Adverse Impact due to loss or degradation of natural habitat							
	with mitigation	1	4	2	3	**21**	**Low**	-	high
	without mitigation	2	5	2	4	**36**	**Medium**	-	high
	degree to which impact can	None							high

Potential Impact	Mitigation	Extent	Duration	Magnitude	Probability	Significance	Status	Confidence
		(E)	(D)	(M)	(P)	(S=(E+D+M)*P)	(+ve or -ve)	
Reserve.	**be reversed:**							
	degree of impact on irreplaceable resources:	Low						high

Terms of Reference for Specialist Studies

A list of specialists that are involved in this study and their area of expertise are listed in **Table 6.3** below:

Table 6:3 Specialists

Specialist Study	Organisation Responsible for the Study
Impacts on terrestrial fauna, flora, avifauna and habitat	Simon Todd Consulting
Visual impact assessment	Visual Resource Management Africa
Heritage Impact Assessment	Agency for Cultural Resource Management
Impacts on soils & agricultural potential	Agricultural Research Council
Surface water and freshwater ecology (wetlands)	The Freshwater Consulting Group
Social & Tourism Impact Study	Lidwala Consulting Engineers (SA)
Traffic study	Lidwala Consulting Engineers (SA)
Geohydrology	GEOSS – Geohydrological and Spatial Solutions International (Pty) Ltd

The terms of reference for each of the above mentioned specialist studies during the EIA phase of the project formed part of the scoping phase. Refer to the specialist studies for the details on the methodology, scope of study, assessment approach, limitations, assumptions, data sourcing and review (previous studies conducted in the study area (Koeberg). The methodology and assessment approach is for all specialists the same and formed part of the scope provided according to the prescribed legislative requirements.

6.4 Environmental Impacts/risks identified and mitigation for specialist field:

Attention in this section is given to highlight the identified impacts by each specialist field given the significance as well as possible mitigation and avoidance measures. (Avoided, reversed or mitigated)

This Scoping Study is twofold as it identifies significant issues that require further investigation as well as identifying the preferred site/s that will go through for further investigation. These issues and sites are carried forward into the EIA phase and subsequently into the Environmental Management Plan.

The assessment of all environmental issues was according to the following factors:

- The nature of the proposed activities and the receiving environment;
- the legal, policy and planning context of the proposed new substation; and
- the socio-economic and environmental priorities of the Interested and Affected Parties (I&APs).

The focus of the EIA narrows down to a judgement (decision based on the results from specialist studies) on whether the predicted impacts are significant. Significance is, however, relative and must always be set in a context, e.g. competition for resources, social sensitivity or the scale and rate of development.

The following section of the EIA Report provides a discussion on the findings of the specialist studies, undertaken to date, with regards to identified issues and impacts.

6.4.1 Agricultural potential:

Substation GIS/AIS

The main potential impact involved in the construction of the substation and its associated infrastructure would be the loss of agriculturally productive soil due to the development. If a construction, such as a substation, is established, then that area is no longer available for cultivation or other forms of agriculture.

The second, associated impact, involves the possible increased wind erosion hazard due to the removal of surface vegetation associated with the construction activities. Without plant roots to bind the sandy topsoil together, the action of the wind could have the effect of removing valuable soil from the site.

Transmission Lines

Due to the reduced footprint, the impacts will be smaller for any transmission lines, but if access roads are constructed, the wind erosion hazard will also become relevant.

The soils in the area are generally sandy, with excessive drainage and limited natural fertility. Coupled with the low prevailing annual rainfall the potential for agriculture in this area is relatively low. There is almost no agricultural activity in these coastal sands in the immediate vicinity, so this impact is not considered to be significant.

However, the potential wind erosion threat is probably more significant, if specific mitigation measures are not implemented.

Table 6:4 Summaries of impacts and risks. Full tables attached to specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 4 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	Wind erosion and loss of soil dune desabilising	16	18	12	32	8	18
Operation	Wind erosion and loss of soil dune desabilising	14	21	18	18	8	12
Decommissioning	Wind erosion and loss of soil dune desabilising	27	40	24	40	8	21
Cumulative	Wind erosion and loss of soil dune desabilising	8	15	14	27	8	8

Degree to which impact can be reversed: For all phases given as "low"
Degree of impact on irreplaceable resources: For all phases given as "low"

MITIGATION AND MANAGEMENT MEASURES

The main mitigation measure will involve soil conservation and stabilization. When any excavation for construction takes place, the extent of soil disturbance should be restricted to the minimum area possible, so that no unnecessary disturbance occurs.

If necessary, windbreaks (such as netting or similar structures) can be erected perpendicular to the prevailing wind direction.

Once construction is complete, re-vegetation of the disturbed areas, using indigenous vegetation, should take place as soon as possible, under the supervision of a qualified vegetation specialist.

CONCLUSIONS

It is concluded that the proposed development will not have large impacts on alternative sites 1 and 4 due to the overall low agricultural potential and the current land use. The main aspects that will have to be managed at the sites when vegetation is removed will involve increased wind erosion susceptibility due to the sandy nature of the soils.

6.4.2 Archaeology:

Anticipated Impacts on Heritage Resources

Alternative 1

The palaeontological study has shown that most of the significant archaeological and palaeontological heritage is likely to be deeply buried and will only be exposed during construction

activities. For example, Early and Middle Stone Age tools, vertebrate fossils (i. e. bone) and shell may be found embedded, or lying on ancient, buried land surfaces underlying the sands of the Witzand Formation, during excavations for the substation. Light orange coloured sands of the Springfontyn Formation are also indicators shown to have been associated with Middle Pleistocene fossils and Stone Age tools.

According to Avery, Alternative 1 is located in a palaeontologically-sensitive region with a hard rock base of Malmesbury Group shale, which outcrops along the coast. Any excavation for foundations and/or infrastructure that penetrates into underlying terrestrial and/or deeper marine sediments may encounter fossils. Since such occurrences are not normally preserved, fossil finds would be significant and would require careful recording and possible systematic excavation. Excavations into deep sediments, not normally accessible to palaeontologists, should also be seen as providing opportunities to recover potentially-important fossil material that enables observations to be made on geology, past sea levels, climates, environments and biodiversity that would otherwise not be possible.

Pre-colonial Khoisan burials may also be exposed during bulk earthworks. Burials provide important information on our pre-colonial antecedents. Any Pleistocene human skeletal material, for example, would be of international significance, which according to the archaeologist Tim Hart, `is possible in this geological context'.

Alternative 4

Early, Middle and Later Stone Age remains have been encountered east of the R27/West Coast Road, in surrounding farmland, and therefore may be exposed during vegetation clearing operations. Significant archaeological heritage is, however less likely to be encountered during the construction phase of the project.

Although palaeontological material is as yet unknown on Alternative 4 (most known observations occur within a kilometer of the coast), the possibility that fossils may occur inland of the R27 cannot be excluded. It is possible that fossils or sub-fossils will be encountered during any excavations that cut into underlying sediments that have been preserved. Large areas further inland are vegetated or under agriculture, and sub-aerial sediments have not been exposed, so the overall extent of the fossiliferous deposits remains to be confirmed.

Table 6:5 Summaries of impacts and risks. Full tables in specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 1 Power Line Corridor		Alternative 4 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	Palaeontology and Sub-surface Archaeology - disturbance	40	100	40	75	16	36	16	36
Operation	Palaeontology and Sub-surface Archaeology - disturbance	15	18	15	18	15	18		
Decommissioning	Palaeontology and Sub-surface Archaeology - disturbance	4	4	4	4	4	4	4	4
Cumulative	Palaeontology and Sub-surface Archaeology - disturbance	4	4	4	4	4	4	4	4

Degree to which impact can be reversed: For all phases given as total possibility with 100% confidence;

Degree of impact on irreplaceable resources: For all phases given as "zero" with 100% confidence. Note that this specialist field also included impact of line turn-inns due to tower construction that might unearth possible artefacts.

Also note: No impact during operation phase in that no earth works will be done during operations.

MITIGATION AND MANAGEMENT MEASURES

Alternative 1:

- A series of linear test pits must be dug across the proposed footprint area prior to construction work commencing;
- It is important to establish the archaeological significance of buried sub-surface deposits before bulk earthworks commence, as it will enable the archaeologist and palaeontologist to develop an appropriate mitigation action plan.
- Should anything of a palaeontological/palynological nature be found on site by the Contractor (or any other party), e.g. bones not previously visible, work is to be stopped in that area immediately, and the Environmental Control Officer (ECO) notified;
- Bulk earth works and excavation for foundations/infrastructure should be monitored by a palaeontologist or archaeologist with appropriate palaeontological knowledge;
- All recommendations must be included into the Environmental Management Plan.

In summary all measures should be focussed to recover any finds by specialists if found on site. The probability is relative high and finds must be recorded. The mitigation is not focussed on avoidance but on proper recovery and data recorded.

Alternative 4:

The same measures apply to site 4 but additional mitigation measures are for the power lines applicable:

- Monitoring of tower footing excavations required. Eskom to contract an archaeologist or palaeontologist before construction to agree on a monitoring plan.
- Archaeologist to undertake a `walk-down' survey of the proposed final alignment to steer potential impacts.

CONCLUSIONS:

The study has shown that the construction of the proposed Eskom Weskusfleur Substation will not impact on any significant surface archaeological heritage.

Unmarked human burials may be discovered during bulk earthworks at both site alternatives and any Pleistocene human skeletal material would be of international significance.

Alternative 1 is located in a palaeontologically and archaeologically sensitive area of the Cape west coast, adjacent to a known palaeo-sequence, which has yielded important fossils and Stone Age artefacts.

Excavations into sediments not normally accessible to palaeontologists should also be seen as providing **opportunities to recover** potentially-important fossil material that enables observations to be made on geology, past sea levels, climates, environments and biodiversity, that would otherwise not be possible.

6.4.3 Geohydrology

The geological setting, with sands overlying bedrock, has resulted in two aquifer systems beneath the two proposed sites. There is an unconfined primary aquifer within the sands and a semi-confined fractured (secondary) aquifer within the Malmesbury bedrock. The primary aquifer at the two sites is part of the southern extent of the Atlantis Primary Aquifer and the bedrock aquifer is known as the Malmesbury Aquifer. A lot of work has been done on both aquifers within the study area and the following description is taken mainly from the work of SRK (2011). The following descriptions are sub-divided according to the aquifer types.

The overall thickness of the sediments is between 15 and 30 m (possibly up to 35 m thick). The sites most probably consist of 3 to 4.5 m of slightly calcareous sand, becoming organic rich with shell fragments below 7.5 m. The lower profile most probably consists of pebbly sand grading into gravels.

With regard to potential geohydrological impacts there is no intention to make use of groundwater during the construction, operational or de-commissioning phases. Thus the groundwater impacts will be minimal, however are discussed in more detail in the section below.

Alternative 1:

Construction phase – the main impact during this phase is related to possible contamination of groundwater from earth moving equipment, from the temporary storage of fuels and lubricants and during the processing of filling fuel tanks and servicing equipment;

Operational phase – the potential groundwater impacts are negligible;

De-commissioning phase – this will be well into the future (possibly more than 30 years away) and all measure must then be taken to avoid contamination of groundwater;

Cumulative impacts – it is highly unlikely that there will be any cumulative impacts on groundwater.

Alternative 4:

Construction phase - the main impact during this phase is related to possible contamination of groundwater from earth moving equipment, from the temporary storage of fuels and lubricants and during the processing of filling fuel tanks and servicing equipment.
For all other phases the same as for alternative 1.
Impacts for the lines are the same as for the substation.

Table 6:6 Summaries of impacts and risks. Full tables attached to specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 4 Power Line Corridor		Alternative 1 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	Groundwater level and quality	2	10	3	12	3	12	2	10
Operation	Groundwater level and quality	2	10	3	12	3	12	2	10
Decommissioning	Groundwater level and quality	2	10	3	12	3	12	2	10
Cumulative	Groundwater level and quality	2	10	3	12	3	12	2	10

Degree to which impact can be reversed: The impact during all phases is reversible with 100% confidence**;**
Degree of impact on irreplaceable resources: There are no irreplaceable resources and distributed all over the area.
Note: that this specialist field also included impact of line turn-inns due to tower construction that might have a very small impact during phases.

MITIGATION AND MANAGEMENT MEASURES

- It must thus be ensured that no earth moving equipment or generators leak fuel or oil;
- When parked overnight the equipment must be stored on an area with an impermeable base or have a "fuel-absorbent blanket" placed under the engine;
- Any generators used must be placed on a sand tray. There must be no spillage when vehicles or generators etc are filled;
- There must be clear procedures to address a fuel spillage with associated clean up material. The Environmental Control Officer must do everything possible to reduce the risk of oil or fuel spillage.

CONCLUSIONS:
The planned WeskusFleur Substation is unlikely to have any significant impact on groundwater due to the planned design of Substation. Of the two alternatives presented the site closer to the ocean is preferred, as the groundwater is more saline and in the unlikely event of any impact occurring it will be less significant than if an impact was to occur at the more inland site (Site Alternative 4).

6.4.4 Surface water and freshwater ecosystems

The study area lies within the Berg Water Management Area (WMA) within quaternary catchment G21B. The two proposed development alternatives in fact lie in two separate catchment areas, as distinguished in the City of Cape Town's database for Major Natural Catchments, with Alternative 1 on the western side of the R27 lying with the Atlantis catchment, while Alternative 4 on the eastern side of the R27 lies in the catchment of the Sout River, which passes into the Atlantic Ocean just south of the study area, in the residential area of Melkbosstrand (Figure 3). The Atlantis Catchment comprises a number of small, mainly seasonal watercourses that feed into the Atlantic Ocean at various points within the City's municipal boundary, as well as numerous isolated, mainly groundwater-fed wetlands. Note that NFEPA data (see Section 3.2) do not distinguish between these two catchment areas.

Alternative 1

This section provides a brief description of the actual proposed Alternative 1 site, its character from a freshwater ecosystems perspective and the wetlands if any that occur within the footprint of the site or its proposed transmission lines.

The development area for this Alternative mainly comprises a degraded area, which has been disturbed in the past, presumably during the construction of the KNPP, result in flattening of most of the area between the gravel road to the north and the KNPP fence, and infilling of parts of this area with rubble / gravel fill material, contributing to its degraded condition.

The only wetlands that occur in the vicinity of any of the areas demarcated for Alternative 1 and its infrastructure comprise the following - Wetland P6 – an artificial excavation, dominated by reedbeds and Wetland P4 lies close to (but just outside of) the area required for use as a temporary turn-in / underpass area, during construction under the existing lines (open brown rectangles). In addition to the above, at the time of the October 2014 site visit, an accumulation of surface water was evident in the area asterisked in Figure 6. This water was flowing out of a submerged pipeline. Should this trend continue, it is possible that low-lying areas north of the gravel road may become wetland in the future. Such areas would however be highly unlikely to extend as far as the footprint of the proposed GIS site alternative 1.

Construction phase

Construction phase impacts to wetlands would be associated with disturbance to wetlands P6, P4 and Sw4 as a result of the turn-in areas, as well as from dewatering. The impacts have been assessed in Table 3 as localized, relatively short-lived, and readily mitigated against. The significance of impact would be Very Low and Low for impacts with and without mitigation.

Operational phase

Operational phase impacts would be limited to potential impacts associated with stormwater runoff. Confidence in design was low, as stormwater management is not specified in the project design details. However, given that no wetlands of importance would be affected by runoff, impact significance would be low, and mitigation measures, which are essentially simply standard best practice measures, would bring the significance down still further, although it shows no change, a non-automated rating would be to Very Low levels.

De-commissioning phase

These impacts are considered of low significance and readily mitigatable.

Cumulative impacts

Cumulative impacts were not identified for this site

Alternative 4

This section describes the proposed Alternative 4 site, its character from a freshwater ecosystems perspective and the wetlands if any that occur within the footprint of the site or its proposed transmission lines.

No natural wetlands were identified in the overall development envelope for Alternative 4. Two natural watercourses were however identified, namely the ephemeral drainage line passing across the north western corner of the site and the Donkergat River, which passes across the south eastern corner of the site. Of these, the proposed pylons required for the Alternative 4 substation would cross the former.

The south running pylons would pass in close proximity to the artificial wetlands that have developed in the excavated sand quarry, while the west-running pylons would pass near, but not directly over, the natural seasonal wetland and the artificial perennial wetland.

Construction phase

No construction phase impacts were identified, given the fact that the site does not include extant wetland areas.

Operational phase

Positive impacts, of low significance only, were accorded this Alternative, as a result of assumed alien clearing activities on the site.

Low significance negative impacts were accorded to stormwater impacts off the site – but these impacts would be readily mitigable to (Very) Low levels (Table 4).

De-commissioning phase

No decommissioning impacts were identified.

Cumulative impacts

No cumulative impacts were identified.

Transmission lines:

For all phases: Only low significance impacts were associated with the phases, and these would be readily mitigatable as well.

Table 6:7 Summaries of impacts and risks. Full tables attached to specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 4 Power Line Corridor		Alternative 1 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	Impact on artificial wetlands	4	15						
	Degradation of edges of development area - high potential wetland development							4	12
	Disturbance of emepheral water course					4	15		
Operation	Storm water impacts on groundwater fed wetlands	10	10	10	14				
	Improvement habitat on assumed alien clearing			21	5				
	Low level disturbance of emepheral water course					5	14		
Decommissioning	Impact on artificial wetlands	4	15						
	Degradation of edges of development area - high potential wetland development							4	12
	Disturbance of emepheral water course			4	15				

Degree to which impact can be reversed: The impact during all phases is reversible with medium to high certainty and confidence**;**

Degree of impact on irreplaceable resources: Reversible with mitigation measures.

Note: due to the nature of this environmental attribute the impacts varies and are not similar to all phases or alternative. This spreadsheet gives an overview. All impacts are rated very low and therefore the surface water and freshwater ecosystem specialist study emphasis that this field is not decisive in site selection and all impacts can easily be mitigated or reduced.

MITIGATION AND MANAGEMENT MEASURES

Alternative site 1:

Construction phase impact mitigation

Construction phase mitigation against impacts to wetlands for this alternative would need to include:

- Treatment of the two wetlands P4 and Sw4 as no-go areas during construction, including:
- Erection of temporary fencing (not danger-tape) to prevent accidental access by machines or personnel into the wetlands;
- Location of stockpiles including sediment or other material likely to blow, seep or wash into the wetlands at a distance of at least 20m from the wetland edge;
- Management of water and sediment stockpiles on site such that they do not blow or wash into these wetland areas;
- Management of dewatering activities so that sediment collection is into controlled, disturbed areas only; infiltration areas are not used for any dewatered liquid that has been contaminated with materials other than natural sediments from the site; and such that runoff is controlled and does not give rise to local erosion;
- Removal of all excess construction-associated material or waste at the end of the construction phase

Operational phase mitigation

Management of stormwater must ensure that stormwater runoff is treated appropriately such that any sediment or water quality contaminants are adequately filtered before the stormwater passes out of the yard, and that outflows into the surrounding area are managed so as to dissipate stormwater runoff without causing erosion.

De-commissioning phase mitigation

Similar measures to those recommended for the Construction Phase would need to be implemented, with the additional stipulation that no waste construction material (concrete, rubble etc.)

Alternative site 4

Construction phase mitigation

Alien clearing activities required for the construction phase should be carried out to ensure long-term alien control, rather than short-term site access. Hence:

- Approved alien plant clearing methods should be followed;
- Painting of cut stumps with appropriate herbicides should be carried out to prevent re-sprouting;
- Cleared / cut woody material should be removed from the vicinity of any wetlands or watercourses, and should ideally be removed altogether from the site.

Operational phase mitigation

Management of stormwater must ensure that stormwater runoff is treated appropriately such that any sediment or water quality contaminants are adequately filtered before the stormwater passes out of the yard, and that outflows into the surrounding area are managed so as to dissipate stormwater runoff without causing erosion.

The following to be implemented:

- An alien removal plan should be formulated and implemented, that looks at practical approaches to address alien invasion across the site and bring it under control within a five year time frame from development authorisation;
- Approved alien plant clearing methods should be followed for all alien control activities, including allowance for painting of cut stumps with appropriate herbicides should be carried out to prevent re-sprouting;
- Cleared / cut woody material should be removed from the vicinity of any wetlands or watercourses, and should ideally be removed altogether from the site;
- Where the Donkergat River and/or other watercourses and wetlands are destabilised as a result of alien clearing, allowance must be made for their reshaping and, where necessary, planting with appropriate locally indigenous vegetation.

De-commissioning phase mitigation

No mitigation measures are considered necessary from a wetland/ river perspective during the Decommissioning Phase.

Substation Alternative associated transmission lines – similar mitigation measures proposed – see full description in the specialist report.

6.4.5 Traffic impact

GIS (Alternative 1)

From discussions with Eskom the following assumptions were made regarding the construction period:

- The construction will start in 2016 and end in 2018 (construction period is 30 months).
- The approximate concrete used for GIS to complete the foundations is 540 m3.
- The foundation construction period for GIS is 6 months.
- A concrete batch plant will be operated outside of the construction site, and thus allowing concrete trucks of 8m3 to travel on the surrounding roads.
- The amount of labourers (skilled and unskilled) are 110 for the civil works.

As with the AIS analysis, a growth of 2% was assumed over the construction period and the same traffic was assumed to cross both intersections, as it is not sure where the construction traffic will travel from/to, in order to analyse the worst case scenario.

AIS (Alternative 4)

From discussions with Eskom the following assumptions were made regarding the construction period:

- The construction will start in 2016 and end in 2019 (construction period is 42 months).
- The approximate concrete used for AIS to complete the foundations is 900 m3.
- The foundation construction period for AIS is 8 months.
- A concrete batch plant will be operated outside of the construction site, and thus allowing concrete trucks of 8m3 to travel on the surrounding roads.
- The amount of labourers (skilled and unskilled) are 160 for the civil works.

A growth of 2% was assumed over the construction period and the same traffic was assumed to cross both intersections, as it is not sure where the construction traffic will travel from/to, in order to analyse the worst case scenario.

Table 6:8 Summaries of impacts and risks. Full tables attached to specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 4 Power Line Corridor		Alternative 1 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	increase heavy vehicular traffic,	8	8	8	8	8	8	8	8
	under capacitated intersection on the R27,	80	33	80	33	8	8	8	8
Operation	No changes in traffic to current normal annual growth	2	2	2	2	2	2	2	2
Decommissioning	Traffic increase as for construction	80	33	80	33	8	8	8	8
Cumulative	Increase in reliable power normal increase in traffic	2	2	2	2	2	2	2	2

Degree to which impact can be reversed: The impact during all phases is reversible with medium to high certainty and confidence with appropriate traffic interventions**;**
Degree of impact on irreplaceable resources: no impact on irreplaceable resources.
Note:

MITIGATION AND MANAGEMENT MEASURES
The mitigation for both sites will be very similar but on the following points it will differ:

- Site 4 will necessitate a new intersection on the R27 that will require a new 4 way intersection with traffic flow measurements;
- Site 4 will require a new hard surface road (paving) that will require additional heavy duty machinery for road construction and during the construction phase will need traffic management on the R27 approaching the new constructed intersection;
- A new traffic count and impact assessment will be necessary if site 4 alternative suffice. This desk top study cannot be used for design and new road alignment decisions. This study only compared site 1 and 4 to determine the preferred alternative.

CONCLUSION
In conclusion the desktop study conducted on the estimated construction traffic indicated that it will not have a significant impact on the R27 for the construction of either the AIS (Alternative 4) or the GIS (Alternative 1). However, the intersection of the main access road with the R27 (Access 1) and the Duynefontein Access with the Main Access road be signalised (Access 3). It should have been signalised already, based on the PBMR TIA (2008) study. Furthermore, the construction traffic will not have a significant impact on the LOS of the signalised intersections, but special measure will need to be put in place for the delivery of abnormal loads. This should be addressed in more detail in the full TIA before the project commences.
Construction for the AIS will require some more traffic investigations as a new access on to the R27 will be necessary.

6.4.6 Visual impact

Landscape Context

As a result of the historic presence of the Koeberg Nuclear Power Station, the landscape context is strongly associated with large isolated structures and numerous powerlines. Tourism is important in the area and includes many accommodation services that cater for tourists looking for cultural or sporting experiences associated with the west coast. The R27 is also an important coastal access route that links the City of Cape Town in the south to the tourist nodes of the West Coast National Park and Langebaan.

Alternative site 1:

The zone for visual influence (ZVI)for Alternative 1 was rated low. The viewsheds of Alternatives 1 mirrored the existing Nuclear Power Plant (NPS) viewshed, as a result of its proximity to the plant. The area coverage was less than the existing NPS viewshed, and their proposed project zone of visual influence would not extend into new areas. The ZVI for Alternative 1 was rated medium.

Alternative 1 GIS site was rated low for scenic quality as the terrain has been strongly modified when it was flattened as part of the Nuclear Power Station security area.

Alternative 1 GIS was rated low for receptor sensitivity towards landscape change. Its close proximity to the Koeberg plant ensures that any development here would be viewed as an extension of the greater power station complex. Alternative 1 transmission lines were rated medium to high for receptor sensitivity for the same reason.

Alternative site 4:

Alternative 4 is located offsite and to the east of the R27. As a result, the viewshed patterning differs from that of the NPS viewshed. Hence, its zone of visual influence would expand to small pockets to the south of the site, but only should a large structure be constructed. The existing precedent for transmission lines on the Alt 4 site is strong. Alternative 1 GIS was rated low for receptor sensitivity towards landscape change due to the proximity of NPS.

Alternative 4 AIS was rated medium for receptor sensitivity.

Power lines

Alternative site 1: Hence, new power lines in the area will not generate high levels of visual contrast. Due to the already high levels of visual contrast generated by the existing Koeberg Power Station, it is likely that visual intrusion from a similar type of electrical landscape modification would not be perceived as visually intrusive. Alternative 1 Transmission Line was rated high for scenic quality.

Alternative site 4 was rated low as, although covered with alien vegetation with limited colour variation, the site is bordered on two sides by transmission corridors and the landscape is common in the region. Alternative 4 Transmission Line areas was rated medium too low for scenic quality due to the close proximity of the site to the existing power line corridor and the prevalence of alien vegetation.

Table 6:9 Summaries of impacts and risks. Full tables attached to specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 4 Power Line Corridor		Alternative 1 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	Impacts from visual resources	22	26	55	70	16	85	44	90
Operation	Impacts from visual resources	18	52	39	64	16	85	44	90
Decommissioning	Impacts from visual resources	8	60	8	60	12	85	44	90
Cumulative	Impacts from visual resources	18	60	20	75	16	85	44	90

Degree to which impact can be reversed: The impact during all phases is reversible with medium to high certainty**;**
Degree of impact on irreplaceable resources: Impact high if not mitigated. Low impact in the case of alternative 1 due to NPS buildings proximity.
Note: See full description in specialist report.

MITIGATION AND MANAGEMENT MEASURES
Alternative site 1:
The visual significance for Alternative 1 GIS was rated medium without mitigation and low with mitigation for all phases of development. Construction and operation phase visual intrusion would be reduced as the GIS structure is low in height, has low levels of visual exposure to receptors and be viewed as a smaller visual component of the existing power station complex.
Construction Phase

- The structure is to be painted a mid-grey colour
- Dust control during construction would also be required as the coastal region is prone to wind.

Operation Phase

- NA

Decommissioning Phase

- All structures and infrastructure are to be removed.

Transmission
Without mitigation, high visual significance is possible due to the loss of the visual resources. The length of the turn-inns, where they merely replace the old lines, will not increase the negative visual impact due to the fact that they replace existing lines. The specialist report however identifies the line as medium to high impact in that they are going through the sensitive dune areas. This is

however not the case. The findings remain for the lines as indicated by the visual specialist. In the overall assessment the visual assessment outcome preference was also site 1.

Cumulative Effects

Cumulative Effects from the proposed GIS development were rated low as the site is already highly modified. It falls within the existing NPS security zone and any development would be viewed as an extension of the existing NPS complex.

Construction Phase

- Strict access restrictions to the area should be maintained with access via the southern existing NPS security road, with construction roads running north-south so as to not crest the north-south aligned sand dunes (subject to botanical specialist stipulations)
- Location of pylons should not be placed on prominent dune features which would increase the potential for disturbance of the surrounding soil structure, eroding the dune structure and impacting the vegetation
- The pylon corridor should not be fenced in and should be retained as a conservation area
- Operation Phase
- Erosion prevention planning and monitoring should be undertaken
- Intensive rehabilitation and restoration of impact areas should be undertaken

Cumulative Effects

Cumulative Effects from the proposed GIS development were rated low as the site is already highly modified. It falls within the existing NPS security zone and any development would be viewed as an extension of the existing NPS complex.

Alternative site 4:

The proposed AIS would be located to the east of the existing transmission line corridor located to the east of the R27. With four powerlines routed from the southeast and three (one proposed) to the northeast, the scenic quality of the site is already degraded. This is reinforced by the invasive alien vegetation. Without mitigation the visual significance for all phases is likely to be high for construction and operation phases and medium for decommissioning phase. Possible mitigation measures:

Construction

- This would require a three metre high screening berm around the proposed site, built with a slope angle not exceeding 1 in 4 so as to facilitate vegetation growth and reduce erosion potential
- Dust control measures would be required to reduce wind-blown dust
- Location of the laydown to the north of the proposed site

Operation

- Fynbos plant species should be planted on the berm around the facility to reduce the visual intrusion to the adjacent small holding residential area.
- As the area currently does not have a bright light precedent, light management mitigations should be implemented (see appendix for examples)
- Erosion prevention planning and monitoring should be undertaken
- Ongoing rehabilitation and restoration as required

Decommissioning

- All structures and infrastructure are to be removed

Transmission

Without mitigation the visual significance of the proposed southern transmission line corridor would be high for the project life due to the routing of the power lines over, or in very close proximity, to the small holding dwellings. This would significantly sterilise the scenic resources of this area resulting in a loss of revenue for the property owners. This is not recommended and an alternative routing should be implemented, or the properties should be purchased by Eskom.

CONCLUSION

The visual significance for **Alternative 1 GIS** was rated medium without mitigation and low with mitigation for all phases of development. Construction and operation phase visual intrusion would be reduced as the GIS structure is low in height, has low levels of visual exposure to receptors and be viewed as a smaller visual component of the existing power station complex.

Nature – low;

Extend – low;

Duration – permanent.

Alternative 4 AIS is likely to be high for construction and operation phases and medium for decommissioning phase. Although the scenic quality of the area is low and there is sufficient distance from the R27 road users, the small holding residential area to the south would have high exposure views of the substation once the alien vegetation around the site was removed. With mitigation the visual significance for construction and operation phases would be medium and low for decommissioning phase.

6.4.7 Ecology

The ecology specialist studied four areas being habitat, flora, fauna as well as avifauna impacts.

A summary assessment of the different impacts associated with the two alternatives is provided below in Table 4. The majority of impacts are considered to be of moderate significance before mitigation and can be reduced to relatively low levels with mitigation applied. The major factors that lead to the relatively low assessed impacts are the low footprint of Alternative 1 and the disturbed nature of the site and for Alternative 4, the high abundance of woody aliens at the site and

the low diversity of indigenous plant species within the affected area. On a comparative basis, for most impacts, there is not a lot of difference between the two sites.

The environment around Alternative 1 is considered more sensitive given its location within the Koeberg Nature Reserve and the known presence of a variety of species of conservation concern in both fauna and flora. Alternative 4 is considered less sensitive given the degraded nature of the affected area, but the size of the development is significantly larger which to some extent compensates for the lower sensitivity. Differentiating factors include the small size of the GIS at Alternative 1 which poses less overall threat to the environment and the greater potential for Alternative 4 to disrupt the connectivity of the landscape in the affected area which has been identified as an important corridor despite its degraded nature.

Table 6:10 Summaries of impacts and risks. Full tables attached to specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 4 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	Impacts on vegetation and protected plant species	35	45	35	50	21	36
	Direct Faunal Impacts	18	28	24	35	16	24
	Avifaunal Impacts	35	50	24	50	24	40
Operation	Soil erosion and associated degradation of ecosystems	15	32	15	32		
	Alien Plant Invasion	15	36	16	36		
	Impact on Avifauna due to power line collisions					24	52
Decommissioning	Soil erosion and associated degradation of ecosystems	15	32	15	32		
	Alien Plant Invasion	15	36	15	36	15	36
Cumulative	Reduced ability to meet conservation obligations & targets	28	40	28	44	28	48
	Impact on broad-scale ecological processes	14	30	30	52		
	Cumulative Impact on Avifauna due to power line collisions					21	48

Degree to which impact can be reversed: The impact during all phases is reversible with medium to high certainty**;**

Degree of impact on irreplaceable resources: Impact high if not mitigated. Lower impact in the case of alternative 1 due to the much smaller footprint involved and within an disturbed area.

Note: See full description in specialist report.

MITIGATION AND MANAGEMENT MEASURES

Vegetation/General

- There should be a preconstruction walk-through of the development footprint in order to locate species of conservation concern;
- Preconstruction environmental induction for all construction staff on site to ensure that basic environmental principles are adhered to;
- The area to be cleared should be clearly demarcated and the construction area;
- All construction vehicles should adhere to clearly defined and demarcated roads;
- Any temporary lay-down areas or construction site management infrastructure should be located within previously transformed areas;
- Dust suppression and erosion management should be an integrated component of the construction approach.

Fauna

- Any fauna threatened by the construction activities should be removed to safety by the ECO or appropriately qualified environmental officer.
- All construction vehicles should adhere to a low speed limit (<30km/h) to avoid collisions with susceptible species such as snakes and tortoises.
- All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up in the appropriate manner as related to the nature of the spill.
- If trenches need to be dug for electrical cabling or other purpose, these should not be left open for extended periods of time as fauna may fall in and become trapped in them. Trenches which are standing open should have places where there are soil ramps allowing fauna to escape the trench.

Avifauna

- Ensure that all new power infrastructure is adequately insulated and bird-friendly in configuration (Lehman et al. 2007).
- All new lines should be marked with bird flight diverters along their entire length (Jenkins et al. 2010), using industry standard markers and marker fitting protocols (e.g. Van Rooyen 2004). In situations where new lines traverse in parallel with existing, unmarked power lines, this has the added benefit of reducing the collision risk posed by the older line.
- Any raptor or other species of conservation concern which may be nesting in the immediate vicinity of the site should be identified before construction commences. This can occur during the preconstruction walk-through of the facility for other fauna and flora related issues. Where necessary, then some adjustment of the timing or location of certain activities may be required to allow breeding to be completed.

6.4.8 Social and Tourism

In the case of the proposed construction of the Weskusfleur substation no large communities are affected in a different way than they are already affected by the existing KNPS and substations over many years. What this in essence means is that no measurable or significant change or social impact might be happening when Eskom simply continues its operations as normal and expand temporarily its substation or build a new one, and decommission the old substation.

The social fabric of the existing environment was built around the Power Stations and Duinefontein was Eskom's property to house the workers necessary to construct Koeberg Power station. Melkbosstrand and Blouberg are further away from the Power Station and are mainly residential for commuters working in and around Cape Town with a high percentage of holiday homes used during school holidays.
An SIA is neither a technical nor an economical exercise; the focus rather falls on **concerns in and impacts on the social environment.**

Some impacts noted:
Social Impacts identified for the project:

Tourism

- The clearing of vegetation to provide for the construction of the substation, thereby creating a scar effect in the landscape;
- Cumulative impacts with regard to expanding the corridors of existing power lines to accommodate the additional power lines connecting the substation to the power station;
- Possible effect of the construction of the substation on sensitive viewers, particularly:
  - Travellers on the R27, especially tourists;
  - Tourist areas, impact on visitors to Koeberg and negative image created;
  - Scenic spots.

Social

- Perceptions and fears associated with the proposed substation and power lines;
- Local, site-specific issues (during construction and operation phases);
- Job seekers and opportunities for theft;
- Security issues;
- Loss of sense of place; and
- Spread of deceases.

MITIGATION AND MANAGEMENT MEASURES

Influx of job seekers: mainly unskilled labour, from the communities with job expectations.

- Identify all labour requirements before construction starts;
- Identify possibilities and creation of a liaison desk 4 months before construction starts.

- Health impacts from construction sites and camps as a result of.
- Construction workers are prohibited from using their surroundings to relieve themselves
- Pit latrines are prohibited on the construction camps or sites. Only mobile or portable toilets shall be used and these must be sufficient for all workers at a ratio of 1 toilet to 15 persons and provided with toilet paper;

Waste

- Littering on site should be prohibited and the ECO should inspect this;
- Fines could be implemented for littering.

Conduct of construction workforce:

- Good relationships between community members/ farm workers and Eskom Construction workers can result in issues such as sexual misconduct and the spread of diseases;

Table 6:11 Summaries of impacts and risks. Full tables attached to specialist reports

Phase	Impact	Alternative 1		Alternative 4		Alternative 4 Power Line Corridor	
		With Mitigation	Without Mitigation	With Mitigation	Without Mitigation	With Mitigation	Without Mitigation
Construction	Influx of job seekers	8	14	30	60	35	55
	Health Impacts	10	12	35	50	26	30
	Conduct of construction workforce	3	5	30	45	18	25
	Theft of construction material	2	3	29	36	10	15
	Negative attitudes towards the project	2	4	40	70	31	65
	Land owners denying contractors access to their properties	1	1	45	80	35	75
	Loss of land leading to economic losses	2	3	40	65	37	62
	Security concerns for neighbouring land/farm owners	5	10	25	33	25	33
	Safety of community members/farm workers/and animals	4	6	31	48	31	48
	Decrease in property values due to the visual impacts of substation and power lines	2	2	44	64	30	61
Operation	Influx of job seekers	6	7	20	50		
	Conduct of maintainance workforce	2	4	15	33	22	50
	Negative attitudes towards the project	2	2	30	43	25	37
	Land owners denying contractors access to their properties	1	1	14	28	26	32
	Security concerns for neighbouring land/farm owners	3	5	29	32	26	38
	Safety of community members/farm workers/and animals	2	4	30	44	30	50
	Increase in the voltage stability		80		80		75
	An assurance of a reliable electricity supply		70		70		65
	No more backlogs in electricity Connections		65		65		63
	The provision of electricity to services such as health facilities will cease		85		85		80
Decommissioning	Influx of job seekers	4	5	10	13	2	4
	Health Impacts	8	16	20	31	12	28
	Conduct of workers	2	4	12	31	10	26
	Theft of material	14	28	26	38	6	10
	Security concerns for neighbouring land/farm owners	2	2	14	30	12	25
	Safety of community members/farm workers/and animals	2	4	26	31	10	30
Cumulative	Loss of land leading to economic losses	2	2	45	75	32	63
	Decrease in property values due to the visual impacts of substation and power lines	2	2	36	68	31	62
	Increase in the voltage stability		85		85		80

6.5 Specialist integration and site selection methodology

Introduction:

Due to the difference in impacts identified by all different specialists field it becomes difficult to compare and come to a site preference outcome. For this reason the following methodology was chosen in order to compare and make an informed decision on the preferred and recommended site for the proposed development.

In addition to the site ranking methodology a weighting proses was also introduced. Not all specialist fields can carry the same weight in the decision making process on preferred site selection. As example the surface water and freshwater ecology in this case does not have any critical impact associated with any of the sites. Therefore the importance is lower than say the ecology, flora and habitat.

Adjustment Factor / weighting factor Methodology

In a weighted matrix each variable / component / specialist field is given a different importance weighting. In order to ensure that consensus is obtained with regards to the weighting / adjustment factors input from the project team, Eskom and all specialists must be obtained. Each person participating in this EIA process is asked to rank each variable according to their **own understanding** of its significance, utilising the following ratings:

- 1 - low significance
- 2 - medium significance
- 3 - high significance

Why own understanding? The reason for this is that it is subjective in nature. The first round is completed by each specialist without any interference from any other field of expertise. This score is then adjusted during the specialist integration workshop that was held during 23 July 2015. At the workshop each specialist presents its findings upon which the score is adjusted in a consensus decision. Once all the input is received, the rating provided for each variable will be added and then divided by the number of people that took part in the exercise in order to obtain an average rating. Three sets of ratings are proposed namely:

- Specialist and Lidwala Project Team ratings;
- Client ratings – Eskom;
- Combined ratings.

The final decision to utilise the combined rating as the final weighting factors for the sensitivity analysis will be decided on at the workshop. The client, Eskom, also take part in that they look at the technical and financial factors. The more people participate with knowledge of the proposed site and its alternatives the better the objectivity. Conflicting stance on importance, was dealt with at the workshop.

The final weighting factors for each aspect were forwarded to the workshop.

The outcome was as follows for the combined score:

Table 6:12 Weighting average for all participants

Average weighting - Weskusfleur substation Koeberg													
Aspect	Social	Visual	Fauna	Flora	Avifauna	Ground water	Surface water	Traffic	Heritage	Agriculture	Total	Fields	Average rating
Social (Bongi)	1	2	1	3	2	1	1	1	1	1	14	10	1.4
Visual (Steve)	3	3	3	3	3	3	2	1	2	1	24	10	2.4
Fauna	3	3	2	2	2	1	1	1	2	1	18	10	1.8
Flora	3	3	3	3	3	1	1	1	2	1	21	10	2.1
Avifauna	3	3	3	3	3	1	1	1	2	1	21	10	2.1
Ground water (Julian)	3	2	3	3	3	1	1	1	3	1	21	10	2.1
Surface water (Liz)	3	3	2	3	3	1	1	1	2	1	20	10	2
Traffic (Willemien)	3	2	1	3	2	1	1	1	1	1	16	10	1.6
Heritage (Jonathan)	3	2	2	2	2	2	1	1	2	1	18	10	1.8
Agriculture (Andre)	2	2	2	2	2	1	1	1	1	1	15	10	1.5
Eskom (Lerato/Michiel)	3	2	2	3	2	1	1	2	2	1	19	10	1.9
EIA Team (Lionel/Frank)	3	2	2	3	2	1	1	1	2	1	18	10	1.8

SITE PREFERENCE RATING SYSTEM

In order to identify which of the alternative sites is deemed preferred the specialist are requested to rank the alternatives sites according to a site ranking methodology.

The evaluation and nomination of a preferred site involves a highly interdisciplinary approach. The approach undertaken has involved a number of specialist studies which examine a number of different issues. In order to evaluate sites and determine a preferred site, the studies need to be comparative and therefore a site rating matrix was developed. The site preference rating system is applied to each discipline, and the rating of each site is conducted according to the following system:

1 = Not suitable for development / No-Go (impact of very high significance - negative)
2 = not preferred (impact of high significance - negative)
3 = acceptable (impact of moderate significance - negative)
4 = Preferred (impact of low or negligible significance - negative)

While each specialist study is required to have the Site Preference as an outcome, how it is evaluated each site will vary from discipline to discipline and the description of the specific approaches are outlined in each specialist report.

The site preference results for each site from each specialist study is entered into a matrix and added together. The site with the highest value is then considered the most preferable.
All specialist fields were included, there score for each site, into the ranking system and adding the weighting score a final site selection outcome was attained:

Table 6:13 Site selection outcome

Weskusfleur ranking	Site 1	Site 4	Weight
Social (Bongi)	4	2	1.40
Visual (Steve)	4	3	2.40
Fauna	4	3	1.80
Flora	4	2	2.10
Avifauna	4	2	2.10
Ground water (Julian)	4	3	2.10
Surface water (Liz)	3	4	2.00
Traffic (Willemien)	4	3	1.60
Heritage (Jonathan)	3	4	1.80
Agriculture (Andre)	4	3	1.50
Eskom (Lerato/Michiel)	4	2	1.90
EIA Team (Lionel/Frank)	4	2	1.80
Total Score	46	33	
Weighted Scores	86	62	
1 = Not suitable for development / No-Go (impact of very high significance - negative)			
2 = not preferred (impact of high significance - negative)			
3 = acceptable (impact of moderate significance - negative)			
4 = Preferred (impact of low or negligible significance - negative)			

From the above it is clear that for example flora and groundwater had the highest weighting score with social the lowest due to the nature of these specialist fields.

6.6 Environmental Impacts Statement and summary of findings and comparative assessment:

In summary the positive impacts from the proposed project outweigh by far any possible negative impact. The proposed substation (GIS) on the preferred site can be seen as a replacement of the existing GIS substation that is close to 31 years old. Due to the nature of nuclear power and the sensitivity associated with this type of power generation the system is very sensitive to any disturbance and because of safety precautions the generation immediately stops if anything happens. That is why the old substation, with old technology, needs replacement to ensure reliable power evacuation.

From an environmental point of view the following is important in choosing site 1:

- The footprint of site 1 is 7,2 compared to 41,8 hectare for site 4;
- Adding the additional power line deviations necessary for site 4 (AIS) it increases the footprint to 61,8 hectare;
- Site 1 is situated within the security area of Koeberg Nuclear Power Station (KNPS) which mean that no additional access security needs to be appointed and less security fences erected;
- Site 4 is totally separated from KNPS and will need an additional road and security;
- Alternative site 1 is in already highly disturbed area and outside the sensitive areas associated with the nature reserve;
- From a visual point of view (sic) the KNPS provides the background and visual point and an additional structure will not be intrusive as for alternative 4. The mere size of the AIS substation for alternative 4 with no other structures surrounding it with high masts will have an negative visual impact;
- Most negative impacts can be mitigated for site 1 which is not so easy for site 4.

From an environmental point of view and through the rigorous process of impact analyses it is recommended that the department authorises the proposed building of the GIS substation on site 1.

Mitigation measures are included in this report and will be suggested and included into the draft EMPr. This can form part of the authorization conditions.

DECLARATION:

DECLARATION OF CONSULTANTS' INDEPENDENCE

I Frank van der Kooy, as the appointed independent specialist hereby declare that I:

- Act as the independent specialist in this application;
- regard the information contained in this report as it relates to my input/study to be true and correct, and
- do not have and will not have any financial interest in the undertaking of the activity, other than remuneration for work performed in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- have and will not have no vested interest in the proposed activity proceeding;
- have disclosed, to the applicant and competent authority, any material information that have or may have the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required in terms of the NEMA, the Environmental Impact Assessment Regulations, 2010 and any specific environmental management Act;
- am fully aware of and meet the responsibilities in terms of NEMA, the Environmental Impact Assessment Regulations, 2010 (specifically in terms of regulation 17 of GN No. R.

543) and any specific environmental management Act, and that failure to comply with these requirements may constitute and result in disqualification;

- have provided the competent authority with access to all information at my disposal regarding the application, whether such information is favourable to the applicant or not; and
- am aware that a false declaration is an offence in terms of regulation 71 of GN No. R. 543.

SIGNED:

Frank van der Kooy (Pr Sci Nat)
EAP and environmental specialist and technical director;
For: Lidwala Consulting Engineers